



115846

02-8904-14-PA

REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT
ADCO CHEMICAL CO.
NEWARK, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8904-14
CONTRACT NO. 68-01-7346


FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY


JUNE 23, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:


RICHARD L. FEINBERG
PROJECT MANAGER

REVIEWED/APPROVED BY:


GERALD HANNAY
SITE MANAGER


RONALD M. NAMAN
FIT OFFICE MANAGER

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART I: SITE INFORMATION

1. Site Name/Alias Adco Chemical Co.
Street 49 Rutherford Street
City Newark State NJ Zip 07101
2. County Essex County Code 13 Cong. Dist. 11
3. EPA ID No. NJD002154086
4. Latitude 40° 42' 45" N Longitude 74° 08' 22" W
USGS Quad. Elizabeth, New Jersey
5. Owner Adco Chemical Co. Tel. No. (201) 589-0880
Street 49 Rutherford Street
City Newark State NJ Zip 07101
6. Operator Adco Chemical Co. Tel. No. (201) 589-0880
Street P.O. Box 128
City Newark State NJ Zip 07101
7. Type of Ownership
☒ Private ☐ Federal ☐ State
☐ County ☐ Municipal ☐ Unknown ☐ Other _____
8. Owner/Operator Notification on File
☒ RCRA 3001 Date 10/9/80 (verified) ☐ CERCLA 103c Date _____
☐ None ☐ Unknown
9. Permit Information
- | Permit | Permit No. | Date Issued | Expiration Date | Comments |
|-----------------|-----------------|----------------|-----------------|----------|
| Local | | | | |
| Air Permits | <u>Unknown</u> | <u>Unknown</u> | <u>Unknown</u> | |
| Sewer Discharge | <u>20401100</u> | <u>Unknown</u> | <u>Unknown</u> | |
10. Site Status
☒ Active ☐ Inactive ☐ Unknown
11. Years of Operation 1974 to Present

12. Identify the types of waste units (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Management Areas

Waste Unit No.	Waste Unit Type	Facility Name for Unit
1	<u>Drums</u>	<u>Former Hazardous Waste Storage Area</u>
2	<u>Drums</u>	<u>Drums in Area of Recovery Unit.</u>
3	<u>Drums</u>	<u>Outside Drum Storage</u>

(b) Other Areas of Concerns

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

RCRA inspections performed on June 16, 1988, July 8, 1988, and July 11, 1988, by Jeffrey Sterling indicated spills in the warehouse where raw materials are stored. These spills occurred on a concrete floor and were not considered environmentally important. There were spills noted on April 4, 1989, by Mark Commandatore. The material spilled is suspected to be toluene and was observed on the northwestern side of the warehouse located north of Delancy Street. On April 20, 1989, during an off-site reconnaissance conducted by NUS Corporation, what appear to be process tanks were noted deposited outside the fenced area of the facility. It is unknown whether these tanks are owned by the facility and materials previously contained inside the tanks are unknown.

13. Information available from

Contact Amy Brochu Agency U.S. EPA Tel. No. (201) 906-6802
Preparer Gerald J. Hannay Agency NUS Corporation Date 6/23/89

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following seven items.

Waste Unit No. 1 - Drums Former Hazardous Waste Storage Area

1. Identify the RCRA permit status, if applicable, and the age of the waste unit.

The facility filed a Notification of Hazardous Waste Activity form, as a generator and a treatment, storage, or disposal (TSD) facility, dated August 18, 1980. A RCRA inspection form dated May 13, 1981, noted that waste was stored for as long as 5 years. These wastes were to be disposed of by July 15, 1982, and were to be stored on site for less than 90 days before off-site disposal. On January 17, 1984, the facility's status was changed from TSD to generator only. According to a July 11, 1988 inspection, no waste solvents have been generated by the site since 1986.

2. Describe the location of the waste unit and identify clearly on the site map.

Waste drums were stored in the eastern corner of the warehouse (Building No. 9) located north of Delancy Street.

3. Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.

The capacity of drum storage is listed as 5,500 gallons. In a May 13, 1981 RCRA inspection the facility is listed as having 75 35-gallon drums on site.

4. Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.

Solid.

5. Identify specific hazardous substance(s) known or suspected to be present in the waste unit.

The waste unit contained spent filter media contaminated with an alkyd resin/solvent mixture. This mixture is made from phthalic anhydride, glycerine diethylene glycol, tall oil fatty acid, vegetable oils, and mixed with mineral spirits, xylol, and naptha.

6. Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.

The drums were in good condition and kept closed, according to a May 13, 1981 RCRA Generator inspection form completed by Charles Elmendorf.

Ref. Nos. 1, 2, 3, 4, 5, 6, 7, 17

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following seven items.

Waste Unit No. 2 - Drums Drums in Area of Recovery Unit

1. Identify the RCRA permit status, if applicable, and the age of the waste unit.

The facility filed a Notification of Hazardous Waste Activity, as a generator and a treatment, storage, or disposal (TSD) facility, dated August 18, 1980, and submitted a Hazardous Waste Permit Application, dated November 19, 1980. Adco refiled its Notification of Hazardous Waste Activity on January 4, 1983 as a generator only, and as of January 17, 1984 was declassified as a TSD facility. Prior to 1987, Adco manifested the solvent-contaminated spent filter media as "waste flammable solids - 001". After 1987 the company installed a recovery device to recycle the solvent. The filters are no longer considered hazardous wastes at the end of the recovery process. The facility received a Notice of Violation dated September 23, 1988 for operation of a TSD without a permit, for non-environmental violations, related to the storage of the filters before going through the recovery process. The facility reportedly agreed to treat the spent filters as hazardous waste until the solvent is removed from them.

2. Describe the location of the waste unit and identify clearly on the site map.

The spent filter media are stored in drums in building No. 3, located south of Delancy Street on the southeastern border of the facility's property boundary, where solvent recovery takes place.

3. Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.

Seventy-two cubic yards were manifested off site, for the last time, on January 3, 1986. As of July 11, 1988, there were thirty 30-gallon drums, and the facility is reported to produce 25,000 pounds of solid filter waste a year.

4. Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.

Solid.

5. Identify specific hazardous substance(s) known or suspected to be present in the waste unit.

The filter media are contaminated with an alkyd resin/solvent mixture. This mixture is made from phthalic anhydride, glycerine diethylene glycol, tall oil fatty acid, vegetable oils, and mixed with mineral spirits, xylol, and naptha.

6. Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.

The wastes are contained in drums. The containment of the drums is not mentioned in the June 16, July 8, and July 11, 1988 inspections.

Ref. Nos. 1, 2, 4, 5, 6, 7, 8, 9, 26

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following seven items.

Waste Unit No. 3 - Drums Outside Drum Storage

1. Identify the RCRA permit status, if applicable, and the age of the waste unit.

The RCRA status and permit history are unknown. The waste unit was observed on an April 20, 1989, off-site reconnaissance conducted by NUS Corp. There was no prior mention of an outside drum storage area, located in this area.

2. Describe the location of the waste unit and identify clearly on the site map.

The waste unit is located outside on the northern and eastern sides of building No. 9.

3. Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.

Based on a count of drums shown in the pictures taken on the April 20, 1989 off-site reconnaissance, 400 55-gallon drums are estimated to be present. It is unknown whether the materials stored in the drums are hazardous.

4. Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.

Liquid.

5. Identify specific hazardous substance(s) known or suspected to be present in the waste unit.

The waste unit is suspected to contain toluene. The presence of other hazardous substances in the waste unit is unknown at this time.

6. Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.

Drums were found overturned on a patch of soil, on April 4, 1989, by Mark Commandatore of the NJDEP, making the waste unit uncontained as it relates to contaminant migration via groundwater, surface water, and air.

Ref. Nos. 17, 26, 27

PART III: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

There is a potential for release to groundwater as overturned drums were found overturned directly on soil on April 4, 1989, by Mark Commandatore of the NJDEP. The contaminant in the drums is suspected to be toluene although analysis has not been completed on samples taken from puddles in the area of the spill.

Ref. Nos. 26, 27, 31

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

The aquifer of concern is the Newark Group Brunswick Shale. Most wells are tapped into the extremely fractured upper portion of the aquifer, which is under modified water table conditions. That is, water is generally free to move in any direction and seek the level determined by the factors affecting recharge and discharge. In the area of the site the Brunswick Formation is at a depth of approximately 30-40 feet. Its exact thickness is not known, but it may be as thick as 5000 feet. The unconsolidated zone between the water table and the bedrock is composed of Pleistocene deposits. These deposits overlie the Brunswick Shale through practically all of the Newark area. The deposits consist of unconsolidated till and stratified glacial drift. The till is an unstratified, heterogeneous mixture of clay, boulders, and sand. The drift is composed of sand and gravel. In the area of the site these Pleistocene deposits are 20-40 feet thick. Specifically in the area of the site, a thick layer of sand, gravel, silt, and clay is separated by an 8- to 14-foot semiconfining layer consisting of silty clay. However, it is unlikely that this semiconfining layer is continuous throughout the area. Depth to the water table in this area is approximately 6 feet. Due to anthropogenic changes in the area, horizontal groundwater movement in the deposit above the silty clay layer is difficult to predict. The horizontal movement of groundwater in the deposit below the silty clay layer is generally northwest.

Ref. Nos. 16, 19, 21

3. **Is a designated sole source aquifer within 3 miles of the site?**

No.

Ref. No. 6

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The lowest point of waste storage is 0 feet, and depth to the water table is approximately 6 feet.

Ref. Nos. 2, 16

5. **What is the permeability value of the least permeable intervening strata between the ground surface and the aquifer of concern?**

The least permeable stratum is the silty clay with a permeability of 10^{-5} - 10^{-7} cm/sec.

Ref. Nos. 11, 16

6. What is the net precipitation for the area?
Approximately 13 inches.
Ref. No. 11
7. Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).
Groundwater is used for industrial purposes.
Ref. No. 18
8. What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?
Distance NA Depth NA
Ref. No. 23
9. Identify the population served by the aquifer of concern within a 3-mile radius of the site.
0.
Ref. Nos. 16, 23

SURFACE WATER ROUTE

10. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.
There is no apparent route for overland contaminant migration and migration through storm sewers. However, there is a slight potential for a release of contaminants to Newark Bay due to the fact that the site is in a flood zone. Overturned drums were observed laying on soil on April 4, 1989. The drums were suspected to contain toluene, although analysis has not yet been completed on samples taken from puddles in the area.
Ref. Nos. 17, 26, 27, 28, 29, 31
11. Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.
The nearest surface water is Newark Bay. Although there is no known water route to surface water, the site is located partially in a 100 year flood zone and flooding could cause contaminant migration to surface water.
Ref. Nos. 10, 20, 28, 29
12. What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)
The site slope is estimated to be less than 1 percent.
Ref. Nos. 2, 3, 4, 5, 6, 7, 8, 9, 17, 20

13. What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water).

The slope of the intervening terrain is estimated to be less than 1 percent.

Ref. Nos. 10, 20

14. What is the 1-year 24-hour rainfall?

Approximately 2.75 inches.

Ref. No. 11

15. What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.

There is no known migration route to surface water. The Newark Bay is approximately 4,500 feet away at its closest point, and contaminant migration could occur due to flooding.

Ref. Nos. 10, 20, 28, 29

16. Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).

Newark Bay is used for industrial purposes, and designated uses of SE3 waters include secondary contact recreation.

Ref. Nos. 14

17. Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.

There is a palustrine emergent wetland, greater than 5 acres in area, within 2 miles of the site.

Ref. No. 24

18. Describe any critical habitats of federally-listed endangered species within 2 miles of the site along the migration path.

There are least terns, a federally listed endangered species, within 2 miles of the site.

Ref. Nos. 12, 25

19. What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?

Although there is no overland migration path there is a palustrine emergent wetland approximately 2,000 feet from the site, which is in the flood prone area.

Ref. Nos. 24, 28, 29

20. Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).

There are no surface water intakes within 3 miles downstream of the site.

Ref. Nos. 10, 22

21. What is the state water quality classification of the water body of concern?

SE3

Ref. No. 13

22. Describe any apparent biota contamination that is attributable to the site.

The June 16, July 8, and July 11, 1988 inspection reports describe dead vegetation near the solvent storage tanks, and the April 20, 1989 off-site reconnaissance report describes what appears to be stressed vegetation.

Ref. Nos. 2, 17

AIR ROUTE

23. Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.

The facility has local air permits. Contaminants that are potentially released to the air are unknown.

Ref. Nos. 2, 5

24. What is the population within a 4-mile radius of the site?

Approximately 424,000.

Ref. Nos. 15, 20

FIRE AND EXPLOSION

25. Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.

There is a slight potential for a fire or explosion to occur as there are ignitable and reactive substances on site. Ignitable or reactive hazardous wastes on site include propenoic acid, toluene, diisocyanate, xylene, methanol, and methyl methacrylate. According to a RCRA generator inspection conducted May 13, 1981, the wastes were stored in adequately maintained drums in a warehouse, under a sprinkler system. According to an inspection conducted July 11, 1988, spent solvent wastes were not usually generated by the site, except for spent filter media, which are later recycled. Before recycling, the waste is stored in drums. Other ignitable or reactive substances handled on site are acetylene, benzene, tert-butyl hydroperoxide solution, dipropylene glycol, methyl ether, ethyleneimine, gasoline, methyl alcohol, methyl methacrylate, methyl propyl ketone, propane, propylene glycol, monomethyl ether, toluene, vinyl acetate, xylenes, butyl acrylate, and methacrylic acid. These substances are stored in drums and aboveground tanks. According to a May 13, 1981 RCRA inspection, drums were stored under a sprinkler system; however, they were observed in the open on April 20, 1989.

Ref. Nos. 1, 2, 3, 5, 17

26. What is the population within a 2-mile radius of the hazardous substance(s) at the facility?
Approximately 47,100.
Ref. Nos. 15, 20

DIRECT CONTACT/ON-SITE EXPOSURE

27. Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.

Most of the facility is enclosed by a barbed-wire fence, but what appear to be process tanks are located outside the fenced-in area. It is unknown if these tanks were deposited by the facility and substances previously contained in the tanks are unknown, making the potential for contact with hazardous substances unknown. The potential for direct contact with hazardous substances for workers on site is unknown.

Ref. Nos. 17, 26, 27

28. How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?

None

Ref. Nos. 2, 17

29. What is the population within a 1-mile radius of the site?

Approximately 1,900.

Ref. Nos. 15, 20

PART IV: SITE SUMMARY AND RECOMMENDATIONS

Adco Chemical Co. is an 11.5-acre site located in Newark, Essex County, New Jersey, in a primarily industrial area. From 1974 to the present, the facility has been manufacturing acrylic and vinyl acetate polymers, alkyds, varnishes, and polyurethanes.

On August 18, 1980, the facility filed a Notification of Hazardous Waste Activity and identified itself as a generator and a treatment, storage or disposal (TSD) facility. Adco also submitted a Hazardous Waste Permit Application dated November 19, 1980. The facility refiled its Notification of Hazardous Waste Activity on January 4, 1983 as a generator only, and as of January 17, 1984, was declassified as a TSD facility.

After 1987 the company installed a recovery device to recycle solvent from spent filter media. The spent filter media, which used to be manifested off site, were now considered an "in-process" material by Adco. This material was stored on site until the solvent was recovered from it. The facility received a Notice of Violation on September 23, 1988, for storing these wastes improperly; in effect, acting as a TSD facility without a permit. The facility has since agreed to treat the spent filters as hazardous waste, under NJDEP regulations, until it goes through the recovery process. The facility also has a permit for discharge to the Passaic Valley Sewerage Commissioners line, and has local Department of Environmental Protection air permits.

The facility, prior to 1986, generated spent solvents which were to be shipped off site within 90 days. According to Adco, spent solvents are rarely generated by the facility, and the last shipment recorded was on September 4, 1986. Waste materials previously reported to be generated by Adco are as follows: aziridine, mercury, 2-propenoic acid, toluene, phthalic anhydride, diisocyanate, furandione, carbamic acid, xylene, methanol, methyl methacrylate, mineral spirits, and naphtha.

Drums were observed laying on their sides, on April 4, 1989 by Mark Commandatore of the NJDEP, on the northwestern side of the warehouse located north of Delancy Street. These drums were suspected to contain toluene but the analysis of samples taken from puddles near the drums has not yet been completed. Once the analysis is completed the NJDEP will decide on the necessary remedial actions. There is what appears to be monitoring well on the northern side of the facility although there is no known investigation of groundwater in this area.

PART IV: SITE SUMMARY AND RECOMMENDATIONS (CONT'D)

The facility is surrounded by a barbed wire fence, making direct contact with hazardous waste unlikely. There are, however, what appear to be empty process tanks outside the fenced-in area. Whether the tanks were owned by the facility or have contained hazardous waste is unknown.

Because of the unusable quality of the groundwater, and the lack of significant surface water use in this area, this site is given a recommendation of **NO FURTHER REMEDIAL ACTION PLANNED (NFRAP)**. It is recommended that the NJDEP investigate the tanks located outside of the fenced-in area.

REFERENCES

1. Letter from Arthur L. Straubing, P.E., Straubing and Rubin, to Jeffrey A. Sterling, Department of Environmental Protection, Division of Hazardous Waste Management, October 5, 1988.
2. NJDEP inspection form, Adco Chemical Company, prepared by Jeffrey A. Sterling of the NJDEP, September 29, 1988.
3. Wagner, Travis. The Complete Handbook of Hazardous Waste Regulation, Washington, D.C., Perry-Wagner Publishing Co. Inc., 1988.
4. U.S. Environmental Protection Agency form 8700-12B, Acknowledgement of Notification of Hazardous Waste Activity (verification). Adco Chemical Co., EPA ID No. NJD002154086.
5. RCRA inspection form, Adco Chemical Co., prepared by Charles Elmendorf of the NJDEP, May 13, 1981.
6. The Hydrogeology of the Buried Valley Aquifer System, Passaic River Coalition, Basking Ridge, New Jersey, 1983.
7. Letter from Frank Coolick, Chief, Bureau of Hazardous Waste Engineering, to Robert Harvie, Adco Chemical Co., March 3, 1983.
8. Letter from Kenneth Goldstein, Chief, Industrial Pretreatment Section, Water Quality Management, State of New Jersey Department of Environmental Protection, to Arthur Straubing, P.E., Straubing and Rubin, January 17, 1984.
9. Letter from Steven C. Holland, Vice President of Adco Chemical Company, to Kenneth S. Stoller, P.E. Acting Director, Air and Waste Management Division, United States Environmental Protection Agency, July 2, 1982.
10. New Jersey Department of Environmental Protection, Sheet 26, Topographic Series, Water Supply Overlay, Drainage Basin Overlay.
11. Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.
12. U.S. Fish and Wildlife Service, Atlantic Coast Ecological Inventory, Newark, 1980.
13. Surface Water Quality Standards, N.J.A.C. 7:9-4. New Jersey Department of Environmental Protection/Division of Water Resources, May 1985.
14. Surface Water Quality Standards: N.J.A.C. & 9-4.1 et. seq. New Jersey Department of Environmental Protection/Division of Water Resources, May 1985.
15. General Sciences Corporation, Graphical Exposure Modeling System (GEMS). Landover, Maryland, 1986.
16. Hydrogeologic Assessment, Central Steel Drum Company, 704 Doremus Ave., Newark, Essex County, New Jersey, Envirionics Inc., April 9, 1985.
17. Off-Site Reconnaissance Information Reporting Form, NUS Corporation Region 2 FIT, April 20, 1989, TDD No. 02-8904-14.

REFERENCES(cont'd)

18. Selected information of wells in the groundwater site inventory data base, Essex County, New Jersey, 1976.
19. Herpers, Henry and Henry C. Barksdale. Preliminary Report on the Geology and Groundwater Supply of the Newark, New Jersey Area. Special Report 10. Trenton, New Jersey, State of New Jersey Department of Conservation and Economic Development, 1951.
20. Three-Mile Vicinity Map for Adco Chemical Co., based on U.S. Department of the Interior, Geological Survey Topographic Maps, 7.5 minute series "Elizabeth Quadrangle, N.J." 1976, photorevised 1981; "Orange Quadrangle, N.J." 1955, photorevised 1981; Weehawken, Quadrangle, N.J. "1967, photorevised 1981; and "Jersey City Quadrangle, N.J." 1967, photorevised 1981.
21. U.S. Department of the Interior, Bedrock Topography and Thickness of Pleistocene Deposits in Union County areas, New Jersey, 1974, Bronius Nemickas.
22. Telecon Note: Conversation between Anthony Debarros, Engineering Dept., Newark Water Dept., and Dennis Foerter, NUS Corp., April 25, 1985.
23. Telecon Note: Conversation between Mr. Melito, Engineer, Essex Dept. of Public Works, and Richard Pagano, NUS Corp., January 20, 1988.
24. Atlas of National Wetlands Inventory Maps for New Jersey. United States Department of the Interior, Fish and Wildlife Service, 1984.
25. Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, United States Department of the Interior, Fish and Wildlife Service, January 1, 1986.
26. Telecon Note: Conversation between Jeffrey Sterling, NJDEP, and Gerald Hannay, NUS Corp., June 14, 1989.
27. Telecon Note: Conversation between Mark Commandatore, NJDEP, and Gerald Hannay, NUS Corp., June 15, 1989.
28. National Flood Insurance Program, Flood Insurance Rate Map, City of Newark, New Jersey. Essex County, Community Panal Number 34018900088. Effective date: March 28, 1980.
29. Telecon Note: Conversation between Mr. Zafar, Newark Engineering Department, and Gerald Hannay, NUS Corp., June 19, 1989.
30. Suszkowski, Dennis. Sedimentology of Newark Bay, New Jersey: an urban estuarine bay, 1978.
31. Telecon Note: Conversation between Mark Commandatore, NJDEP, and Gerald Hannay, NUS Corp., June 20, 1989.

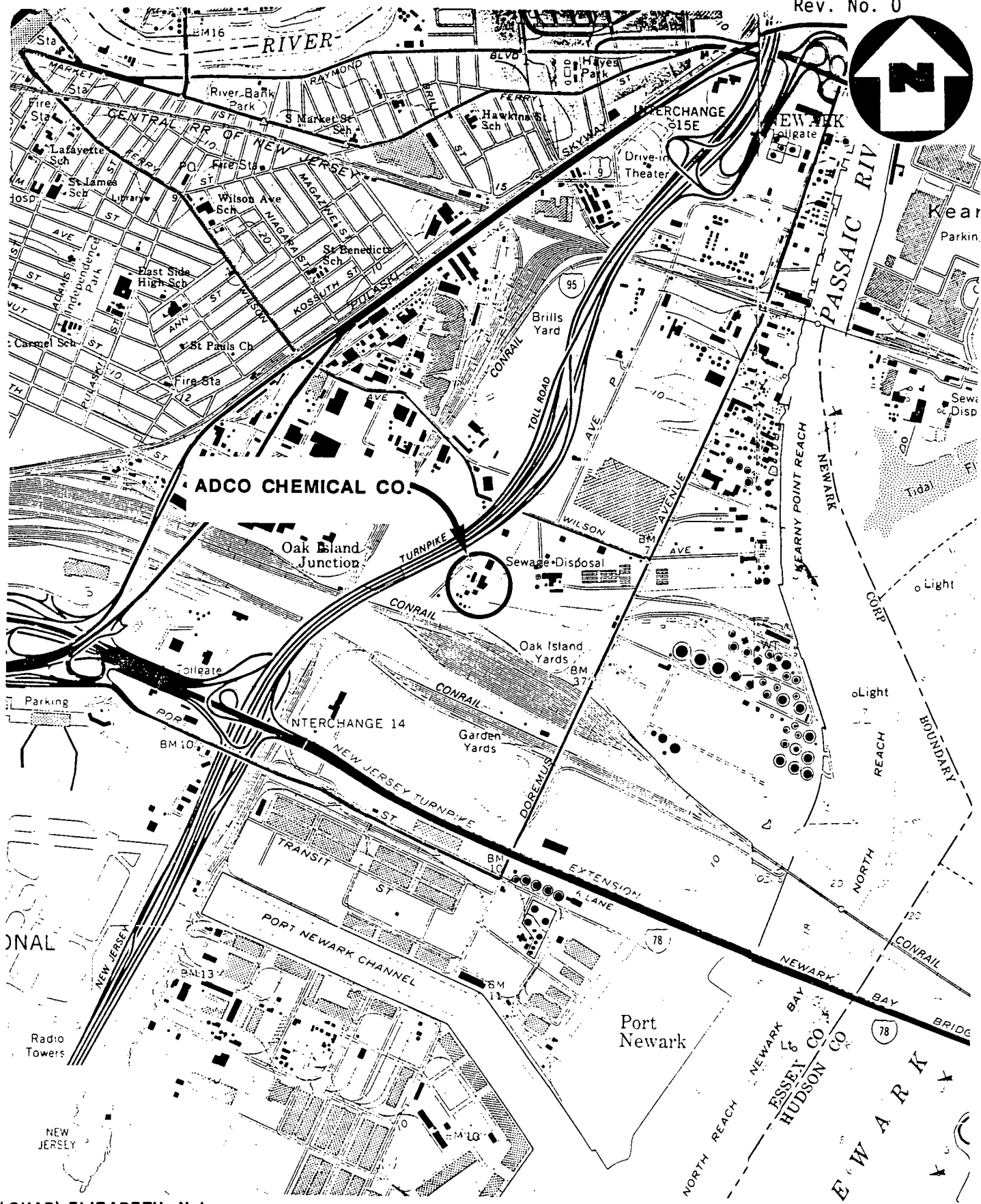
ATTACHMENT 1

ADCO CHEMICAL COMPANY

NEWARK, NEW JERSEY

CONTENTS

Figure 1: Site Location Map
Figure 2: Site Map
Exhibit A: Photograph Log



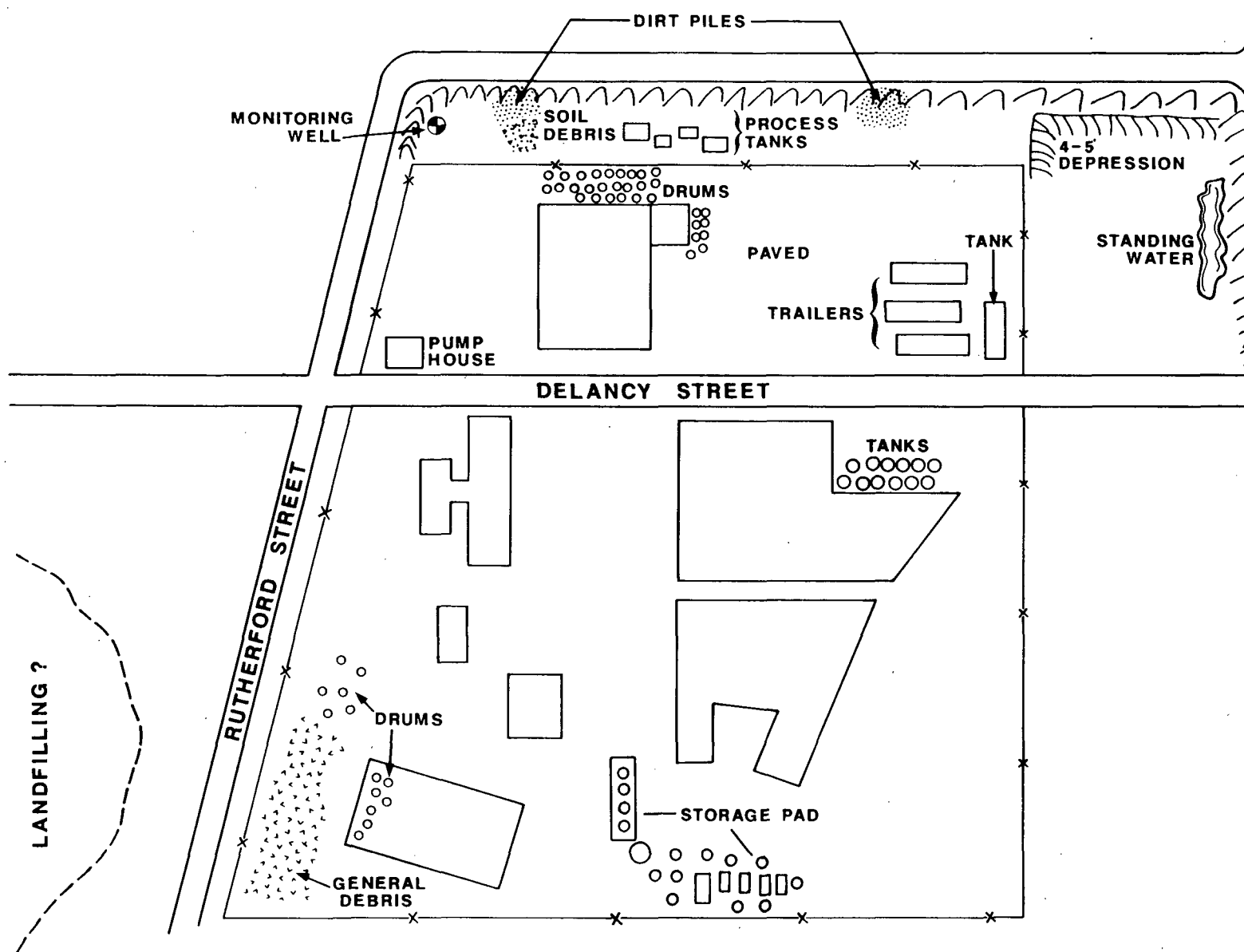
(QUAD) ELIZABETH, N.J.

SITE LOCATION MAP
ADCO CHEMICAL CO., NEWARK, N.J.

SCALE: 1"= 2000'

FIGURE 1





SITE MAP
ADCO CHEMICAL CO., NEWARK, N.J.
 (NOT TO SCALE)

FIGURE 2



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 Rev. No. 0

EXHIBIT A

PHOTOGRAPH LOG

ADCO CHEMICAL CO.
NEWARK, NEW JERSEY

APRIL 20, 1989

ADCO CHEMICAL CO.
NEWARK, NEW JERSEY
APRIL 20, 1989

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PHOTOGRAPH INDEX

ALL PHOTOS TAKEN BY JOHN HARRISON

<u>Photo Number</u>	<u>Description</u>	<u>Time</u>
1P-1	Drums on north side of warehouse.	0952
1P-2	Looking south toward what appears to be a monitoring well and drum storage.	0955
1P-3	Empty tanks.	0957
1P-4	View of facility looking south.	0959
1P-5	View southwest at back of facility.	1005
1P-6	View of facility looking northeast, showing drums, debris, and unpaved ground.	1010
1P-7	Stressed vegetation, drums on unpaved ground.	1015
1P-8	Main gate and facility looking north-northwest.	1017

ATTACHMENT 2

REFERENCE NO. 1

07-14-52

STRAUBING & RUBIN

CONSULTING ENGINEERS

6 SOUTH ORANGE AVENUE
SOUTH ORANGE, N.J. 07079

CERTIFIED (RRR)
(P 939 953 734)

(201) 762-5950
TELEFAX: (201) 762-1639

October 5, 1988

OCT. 7

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
2 Babcock Place
West Orange, NJ 07052

Att: Mr. Jeffrey A. Sterling

Ref: RCRA Inspection at Adco Facility
dated 6/16/88 and 7/11/88
Your letter dated 9/23/88 (copy attached)
Facility ID NJD 002154086

Subject: Request for Meeting

Gentlemen:

We are consultants to Adco Chemical Company. In this connection we received a copy of the referenced communication and the appended NOV as well as that of 7/11/88.

With specific reference to your September 23rd letter, we are requesting an informal meeting to review the findings that the diatomaceous earth which is presently being recycled is considered by the DEP to be a "hazardous waste".

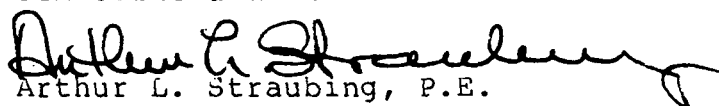
In addition we wish to discuss some of the other items at issue incorporated in the DEP's NOV of both 7/11/88 and 9/23/88.

We take note of the requirement in the NOV for submittal of a compendium of corrective measures to be taken by Adco to come into compliance with the NOV. This submittal must be made within 15 days of receipt of the NOV. Pending the outcome of such a meeting we are requesting an extension of the response date.

Thank you.

Very truly yours,

STRAUBING & RUBIN


Arthur L. Straubing, P.E.

ALS:ms
5024A
Enclosure
cc: Mr. S. Holland
Mr. W. G. Parker



RECEIVED

OCT 3 1988

State of New Jersey

STRAUBING & RUBIN

**DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT**

John J. Trela, Ph.D., Acting Director

2 Babcock Place

West Orange, N.J. 07052

201-669-3960

September 23, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
P-552-069-468

Adco Chemical Company
P.O. Box 128
Newark, New Jersey 07101

Attn: Steven Holland

Dear Mr. Holland:

RE: RCRA inspection at your site on 6/16/88 and 7/11/88.

A review of my findings from the above referenced inspections indicates that you are in violation of the annual reporting requirements for generators who recycle on site generated hazardous waste on site. The record shows that you used to manifest solvent contaminated filter residues offsite as a hazardous waste. You indicated during the above referenced inspection that you last manifested contaminated filter residues in 1986 and that since then you have been recycling this waste stream by reclaiming the solvents for use in your manufacturing process.

Generators may recycle onsite generated hazardous waste without a hazardous waste permit provided that they comply with terms of NJAC 7:26-12.1(b)9 (also see NJAC 7:26-9.1(c)10). The terms of NJAC 7:26-12.1(b)9, in your case, require you to:

- Comply with the annual reporting requirements of NJAC 7:26-7.4(g)2. (You only complied with NJAC 7:26-7.4(g)1).
- Recycle the hazardous waste within 90 days after it is generated
- Place the waste in containers which comply with NJAC 7:26-7.2 and are managed in accordance with NJAC 7:26-9.4(d)

September 23, 1988

Page 2

- Place accumulation start dates on each container so that they are visible for inspection.

If you DO NOT comply with the terms of NJAC 7:26-12.1(b)9, you need to have a Part B RCRA permit. In your case, since you were observed to be in violation of the above, you effectively were operating a TSD without a permit. This is a violation of NJAC 7:26-12.1(a). A Notice of Violation is enclosed. Please respond by either applying for a permit or complying with NJAC 7:26-12.1(b)9.

I am in receipt of a response from STRAUBING & RUBIN (your consultants). This response is dated 9/20/88. It does not address the the following violations which were issued to you on 7/11/88:

NJAC 7:26 - 9.4(g)6iv
- 9.4(g)8
- 9.7(i)2

Please submit documentation showing your compliance to these citations.

The analytical results of the samples that were taken from your facility during the RCRA inspection will be made available to you at a later date.

Please call me if you have any questions about this letter.

Very truly yours,



Jeffrey A. Sterling
Environmental Engineer

JS:hc

cc File: 07-14-52

Document processor

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

5th Fl., 401 E. State St., Trenton, N.J. 08625

2 Babcock Place, West Orange, NJ 07052

NOTICE OF VIOLATION

ID NO. NJD 002154086

DATE 7-11-88

NAME OF FACILITY ADCO Chemical Company

LOCATION OF FACILITY 49 Rutgerford ST, Newark, NJ 07105

NAME OF OPERATOR STEVEN Holland

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION NJAC 7:26-7.4(f)2 failing to keep
a copy of 1985 Generator Annual Report for at least (3)
years, NJAC 7:26-9.4(g)6i failure to document job title
for each position at facility related to haz. waste management
and name of employee filling each job
NJAC 7:26-9.4(g)6ii no written job description for
each position related to haz. waste management

Remedial action to correct these violations must be initiated immediately and be completed by

8-11-88 . Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of \$25,000 per violation.

Jeffrey A. Sterling

Investigator, Division of Waste Management
Department of Environmental Protection

Jeffrey A. Sterling

201-669-3960

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
~~5th Fl., 401 E. State St., Trenton, N.J. 08625~~

2 of 3

NOTICE OF VIOLATION

ID NO. NJD002 154 086

DATE 7-11-88

NAME OF FACILITY Adco Chemical Co.

LOCATION OF FACILITY 49 Rutherford ST, Newark, NJ 07105

NAME OF OPERATOR STEVEN Holland

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION NJAC 7:26-9.4(g)6iii no written job
description on the type and amount of ... training ...
NJAC 7:26-9.4(g)6iv no documentation of actual training
or experience received by personnel, NJAC 7:26-9.6(f)3
no agreements with emergency response contractors
and equipment suppliers ... , NJAC 7:26-9.4(g)8
no semi-annual drills conducted involving all employees

Remedial action to correct these violations must be initiated immediately and be completed by

8-11-88. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of \$25,000 per violation.

DA Sterling
Investigator, Division of Waste Management
Department of Environmental Protection

NOTICE OF VIOLATION

ID NO. NJ D002154086 DATE 7-11-88
 NAME OF FACILITY Adco Chemical Co.
 LOCATION OF FACILITY 49 Rutherford ST, Newark, NJ 07105
 NAME OF OPERATOR Steven Holland

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION and appropriate local authorities to test emergency response capabilities; 7:26-9.7(f) contingency Plan does not designate who the primary emergency coordinator is, etc.; 7:26-9.7(g) contingency plan does not describe the capabilities of all the emergency equipments onsite*; 7:26-9.7(h) contingency plan does not include an evacuation procedure 7:26-9.7(i)2 contingency plan not Submitted to local authorities

Remedial action to correct these violations must be initiated immediately and be completed by

8/11/88. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of \$25,000 per violation.

* eg. what types of respirators?

REVIEW 40 CFR 268

D. Sterling
 Investigator, Division of Waste Management
 Department of Environmental Protection

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

5th Fl., 401 E. State St., Trenton, N.J. 08625

2 Babcock Place, W. Orange, NJ 07052

NOTICE OF VIOLATION

ID NO. NJD002154086

DATE 9/23/88

NAME OF FACILITY ADCO CHEMICAL COMPANY

LOCATION OF FACILITY 49 Rutherford St, Newark, NJ 07105

NAME OF OPERATOR STEVEN HOLLAND

You are hereby NOTIFIED that during my inspection of your facility on the above date, the following violation(s) of the Solid Waste Management Act, (N.J.S.A. 13:1E-1 et seq.) and Regulations (N.J.A.C. 7:26-1 et seq.) promulgated thereunder and/or the Spill Compensation and Control Act, (N.J.S.A. 58:10-23.11 et seq.) and Regulations (N.J.A.C. 7:1E-1 et seq.) promulgated thereunder were observed. These violation(s) have been recorded as part of the permanent enforcement history of your facility.

DESCRIPTION OF VIOLATION NJAC 7:26-12.1(a) operating a
treatment and/or storage facility without first
submitting a Part A and B of permit application *

Remedial action to correct these violations must be initiated immediately and be completed by

10/14/88. Within fifteen (15) days of receipt of this Notice of Violation, you shall submit in writing, to the investigator issuing this notice at the above address, the corrective measures you have taken to attain compliance. The issuance of this document serves as notice to you that a violation has occurred and does not preclude the State of New Jersey, or any of its agencies from initiating further administrative or legal action, or from assessing penalties, with respect to this or other violations. Violations of these regulations are punishable by penalties of \$25,000 per violation.

not complying fully with terms
of exemption at NJAC 7:26-~~9.1(c)(1)~~
12.1(b)9
(annual reporting & container
management).

D. Sterling
Investigator, Division of Waste Management
Department of Environmental Protection

REFERENCE NO. 2

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
HAZARDOUS WASTE INSPECTION REPORT

07-14-52

DWM-029

GENERATOR INSPECTION REPORT

FACILITY INFORMATION

FACILITY NAME: Adco Chemical Company

FILE NUMBER: 07-14-52

VHT FACILITY FILE NUMBER: _____

PERMIT #:

REGION: Metro

INSPECTION DATE: 6/16, 7/8, 7/11/88

INCIDENT/CASE NUMBER: _____

INSPECTION TYPE: RCRA

RESPONSIBLE AGENCY CODE: _____

INSPECTOR'S NAME: JEFFREY STERLING

INSPECTOR'S AGENCY: NTDEP

INSPECTOR'S BUREAU: FIELD OPERATIONS

EPA ID NUMBER: NTD 002154086

ADDRESS:

49 RUTHERFORD ST

Newark, NJ 07105

LOT: 15

BLOCK: 5050

COUNTY: Essex

FACILITY PERSONNEL: STEVEN HOLLAND

Plant manager

TELEPHONE #: 201-589-0880

OTHER STATE/EPA PERSONNEL: Ruark Smith, NTDEP

Sam Ezekwo, USEPA

Dale Adkisson, NTDEP

REPORT PREPARED BY: Jeffrey A. Sterling

REVIEWED BY: [Signature]

DATE OF REVIEW: 09-29-88

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS:

On 6/16/88, 7/8/88 and 7/11/88, a RCRA inspection was conducted at Adco Chemical Company (Adco). Adco was represented primarily by Mr. Steven Holland, the general manager. The facility is identified by the EPA ID No. of NJD002154086, which was issued in 1980. Adco has been at its present location since the mid 1970's.

Adco employs about 45 employees and it is a manufacturer of water based and solvent based resins which are used by paint manufacturers. Adco uses a wide variety of chemicals to make its products. The types of resins that Adco makes can be described as follows:

- i) alkyd resins
- ii) polyurethane resins
- iii) acrylic co-polymer
- iv) vinyl acetate co-polymer resins

Adco indicated that the only process that generates a hazardous waste stream is the manufacture of alkyd resins, which are solvent based. According to Adco, the alkyd resin is created from the reaction of a dibasic acid or anhydride (eg. phthalic anhydride) with a hydroxyl group. This is done in the presence of one or more vegetable

SUMMARY OF FINDINGS

FACILITY DESCRIPTION AND OPERATIONS (continued):

oil (such as linseed oil, coconut oil, or soybean oil). These oils contain fatty acids. These ingredients are reacted in the presence of hydrocarbon solvents such as mineral spirits or xylene. The company said that these reactions take place in closed reactors and that the solvents were not a part of the reaction. After the ~~alkyd~~ alkyd resins were formed, they are transferred to a tank where solvent is added to it them. The alkyd resins are sold as a solvent-resin mixture. Prior to being sold, however, the alkyd resin/solvent mixture is filtered to remove solid particles. The filtering media consists of cloth, paper, diatomaceous earth, etc.

After the material is filtered, the filtering device is cleaned. The "spent filter media" is removed and drummed as a waste material.

In the manufacture of the water-based resins, water and various monomers are mixed in reactors. Surfactants are added (also catalysts)*. These are then reacted to yield a water based product. No hazardous waste stream results from the production of the water based resins, according to BDCO.

The reaction that yields the alkyd resins (solvent based) also yields "waters of reaction". This

* The catalysts are

Sodium persulfate or peroxide

SUMMARY OF FINDINGSFACILITY DESCRIPTION AND OPERATIONS (continued):

"water of reaction" is fed into a settling tank. There, the residual solvent separates and floats to the top of the tank while the water settles at the bottom. The water of reaction is slightly acidic. The solvent is decanted and is reused and the water is neutralized with NaOH before it is sewerred.

The alkyl resin reactors are cleaned with a caustic solution, according to Adco. This is re-used and make-up caustic is added. The "water-based" reactors are rinsed with water. Process ^{waste} water at the company consist of "water-based" Reactor washwater, floor washes, and "water of reaction" from the alkyl resin manufacturing process.

Adco stated that they use noncontact cooling water at the facility, which is recycled.

The company indicated that prior to 1987 they used to manifest the spent filter ^{residues} as "waste flammable solid, D001." In 1987 they installed a recovery device which recovers the solvents that are trapped in the filter media. The filter media is pulverized and the media is placed in a closed device, which, when heated, drives the trapped solvent out of the pulverized media. This vaporized solvent is collected and

FACILITY DESCRIPTION AND OPERATIONS:

chilled. This recovered solvent is reused in the alkyl resin manufacturing process. It is not a spent solvent. It just happens to be solvent that was trapped in the filter media. Adco said that the filter residue was non-hazardous after the solvent, such as xylene, was removed from it. The NJDEP recently classified it as non-hazardous (see attached letter from DEP dated 1/22/88).

A review of the company's disposal manifests for 1985 revealed the following:

4 shipments (each \approx 18 cu. yard) or (200 fiber drums)/shipment of D001 solids were sent to SCA/Chem Waste Regd in Chicago for incineration.

In 1986 the shipments were as follows:

1/3/86 - 200 fiber drums (18 cu. yards) sent to SCA/Chicago for incineration.

on 8/29/86, 3000+ gallon of waste flammable liquid (D001) were sent to SRS, Linden and

9/14/86 - 4460 gal of D001 liquids were sent to SRS. (There were

FACILITY DESCRIPTION AND OPERATIONS:

mineral spirits, pigments/resins). These shipments to SRS consisted of contaminated solvents and this was an anomaly, according to Adco.

In 1986 Adco only made one shipment of spent filter media offsite (i.e., in 1/86). Adco stored the subsequent accumulation of spent filter media onsite for greater than 90 days in 1986 because, they say, they wanted to treat the filter media onsite ~~in their newly installed recovery unit~~ when their recovery device came on-line.

Adco does not presently consider its spent filter media to be a waste. They consider it to be an "in process" material. As such, the company does not label the containers that are used to accumulate the spent filter media, etc. The company estimates that about 3-4 x 30 gal filter drums of spent filter aid is generated/day. Each drum weighs about 200-240 lb.

A tour of the facility revealed that the company stores bulk quantities of various raw material. Tank farms were observed with above ground tanks. Some were diked and some were not. The solvent tank farm contained mineral spirits, solvent 140, Toluene, methacrylate, vinyl acetate, naphtha, etc.

FACILITY DESCRIPTION AND OPERATIONS:

Several rail cars were observed on the site. These were said to contain vegetable oils. Lots of spillages had occurred from these rail cars as various spill spots were noticed on the rail tracks beneath the cars.

The ground in the solvent tank farm area (where tank 212 is situated) was very soft even though it was a very hot and dry day.

The entire facility was inspected (raw material storage area, finished product storage area). The spent filter media was stored in the same area where the recovery unit was situated. Several drums of the material were observed. There was no aisle space between them.

Samples were taken from the site. Sample # STE 020 was taken from under a rail car that was said to contain vegetable oils. (soil sample). STE 021 was taken from the solvent tank farm between tank 210 & 213. Dead vegetation was observed near this sample site. STE 022 was taken from a puddle that was in the tank farm near Tank 208. Sample STE 024 ~~collected~~ was taken from a drum that contained the "non-hazardous" treated residue from the

SUMMARY OF FINDINGSFACILITY DESCRIPTION AND OPERATIONS:

filter press (i.e., after the solvent had been removed). All the sample were split with the company. (Sample STE023 was the trip blank).

The company has a sewer discharge permit from the local POTW (Passaic Valley Sewerage Commissioners, which is less than 1/4 mile away from the company). The Permit # is 204 01100. Adco is ~~required~~ required to monitor for BOD, TSS, LEC (continuous) and pH. The company also possesses air permits.

Adco said that their average daily discharge volume into the POTW is 3150 gallons/day.

Adco was cited for noncompliance with the requirements of NJAC 7:26-7.4(f)2, 9.4(g)6, 9.6(f)3, 9.4(g)8, 9.7(f), 9.7(g), 9.7(h), 9.7(i)2

Attachments

- ① Manifest IL1286013 (example of manifest)
- ② APPENDIX A - letter requesting generator status
- ③ " B - letter from DEP granting generator status
- ④ " copy of original part A.
- ⑤ APPENDIX C - letter requesting reclassification of waste
- ⑥ " D - letter classifying treated residue non-hazardous
- ⑦ List of Hazardous substances at Adco (Right to Know Survey).

-B-

Describe the activities that result in the generation of hazardous waste.

- ① Filtering of ~~alkyd~~ alkyd resins → solvent contaminated filter media (D001) - solid.

- this is only waste stream. However, the potential for offspec ~~resin~~ products might cause other wastes to be occasionally produced.

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

- 30 x 30 gal Fiber drums of spent filter aid (D001) solids (diatomaceous earth, filter paper, cloth, contaminated with solvents, alkyd resins). These are not considered as "waste" by company. Company previously manifested this material offsite prior to 1987 when they began to treat it to recover the solvent that was trapped in the filter media.

- Since 1/86, none has been manifested offsite.

- ⊗ About 25,000 pounds of spent filter residue / yr is generated at ADCO.

The company stated that they had no underground tanks onsite. No hazardous waste were stored in Tanks.

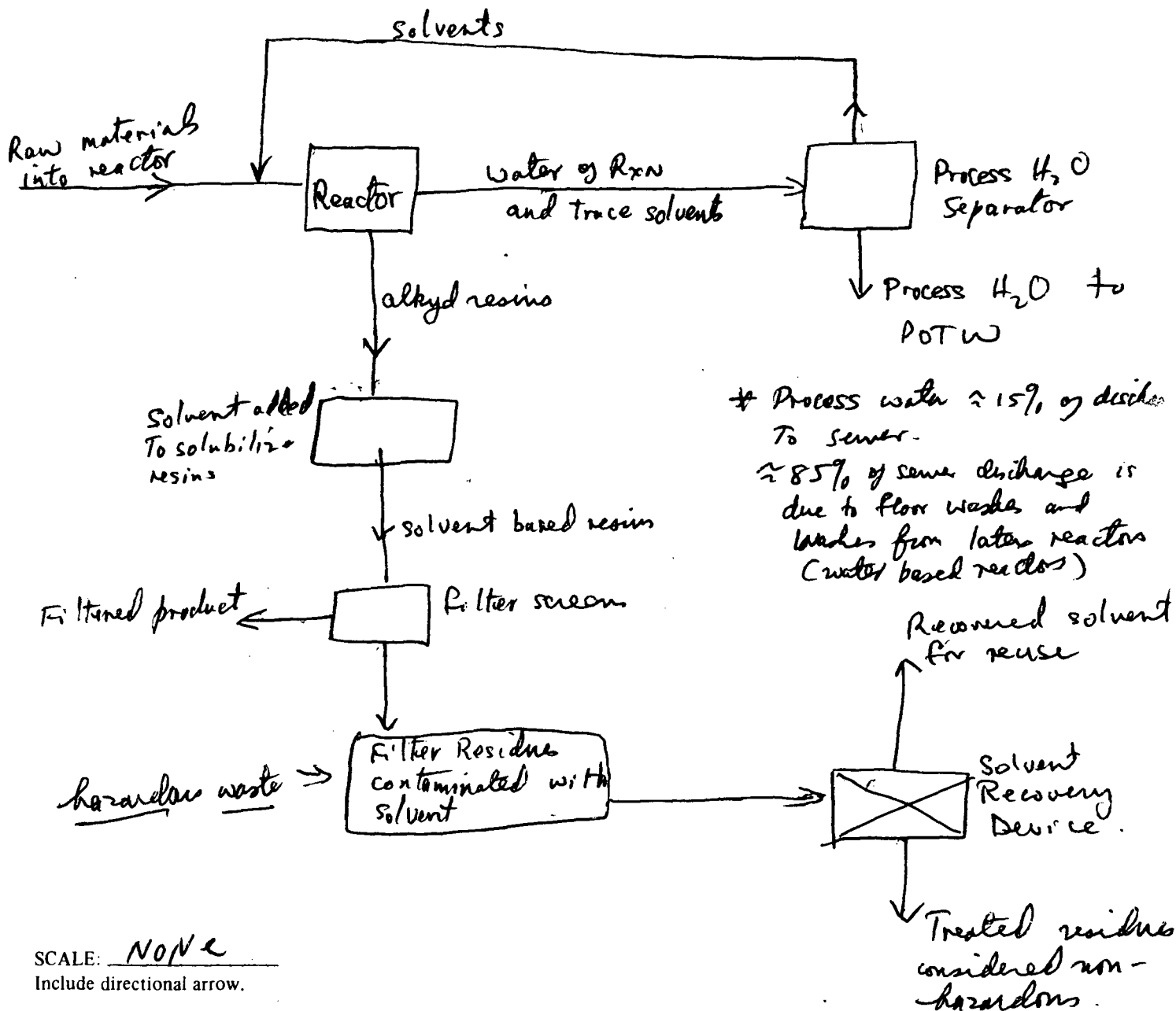
INVESTIGATION

CASE # 07-14-52

DATE 7-21-88

SKETCH

Schematic of Alkyd Resin Process



SCALE: NONE
Include directional arrow.

Supervisor Signature

M. Sterling
Investigator Signature

GENERAL CHECKLIST

GENERAL

YES NO N/A

7:26-7.4(a)1

Does the Generator have an EPA ID number?

☒ ☐ ☐

HAZARDOUS WASTE DETERMINATION

7:26-8.5(a)

Did the generator test its waste to determine whether it is hazardous?

☒ ☐ ☐

7:26-8.5(b)

Did the generator determine the hazardous characteristics based upon knowledge of process?

☒ ☐ ☐

Is the waste hazardous?

☒ ☐ ☐

7:26-8.5(d)

Were test results, waste analysis, or other determinations made in accordance with this section kept for three years from the date that the waste was last sent to an on-site or off-site TSF?

☒ ☐ ☐

MANIFESTS

7:26-7.4(a)4

Does each manifest have the following information? Please circle the elements missing and obtain a copy of the incomplete manifests. (List those manifests that are deficient on G-1).

Last shipped offsite 9/4/86 waste now recycled onsite. Treated residues are nonhazardous according to the company.☐ ☐ ☐

7:26-7.4(a)4i

The generator's name, address and phone number.

☒ ☐ ☐

7:26-7.4(a)4ii

The generator's EPA ID number.

☒ ☐ ☐

7:26-7.4(a)4iii

The hauler(s) name, address phone number and NJ registration.

☒ ☐ ☐

7:26-7.4(a)4iv

The hauler(s) EPA ID number.

☒ ☐ ☐

7:26-7.4(a)4v

The name, address and phone number of the designated TSD facility.

☒ ☐ ☐

7:26-7.4(a)4vi

The TSF's EPA ID number.

☒ ☐ ☐

7:26-7.4(a)4vii

The name, address and phone number of the designated TSD facility.

☒ ☐ ☐

7:26-7.4(a)4viii

The name, type and quantity of hazardous waste being shipped, including such particulars as may be required regarding same?

☒ ☐ ☐

7:26-7.4(a)4viii

Special handling instructions and any other information required on the form to be shipped by generator?

☒ ☐ ☐*supplied*

		<u>YES</u>	<u>NO</u>	<u>N/A</u>
7:26-7.4(a) <i>4viii</i>	Did the generator describe all N.O.S. wastes in Section J?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(a)ix	When shipping hazardous waste to a waste reuse facility does the generator enter the waste reuse facility I.D. # in the section G of the Uniform Manifest?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7:26-7.4(a)5	Before allowing the manifested waste to leave the generator's property, did the generator:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(a)5i	Sign the manifest certification by hand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(a)5ii	Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(a)5iii	Retain one copy and forward one copy to the state of origin and one copy to the state of destination?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(a)5iv	Provide the required numbers of copies for: generator, each hauler, owner/operator of the designated facility, as well as one copy returned to the generator by the facility owner/operator?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7:26-7.4(a)5v	Give the remaining copies of the manifest form to the hauler?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(f)	Has the generator maintained facility records for three (3) years? (Manifest(s), exception report(s) and waste analysis) <i>no 1985 Annual Report</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(h)1	Has the generator received signed copies of portion B (from the TSD facility) of all manifests for waste shipped off site more than 35 days ago?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7:26-7.4(h)1	If not: Did the generator contact the hauler and/or the owner or operator of the TSDF and the NJDEP at (609) 292-8341 to inform the NJDEP of the situation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7:26-7.4(h)2	Have exception reports been submitted to the Department covering any of these shipments made more than 45 days ago?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Short term accumulation standards for generators who accumulate waste in containers and tanks for 90 days or less:

		<u>YES</u>	<u>NO</u>	<u>N/A</u>
<u>Containers</u>				
7:26-9.4	What type of containers are used for storage. Describe size, type, quantity, and nature of waste (e.g. 12 fifty-five gallon drums of waste acetone).			<i>no waste on site</i> ✓
7:26-9.4(d)2.	Do the containers appear to be in good condition, not in danger of leaking?			
	If no, describe the problem (include number of containers involved.)			
7:26-9.4(d)4i	Are all containers securely closed except those in use?			
7:26-9.4(d)4iii	Do the containers appear to be properly handled or stored in a manner which will minimize the risk of the container rupturing and/or leaking?			
7:26-9.4(d)4iv	Are containerized hazardous wastes segregated in storage by waste type?			
7:26-9.4(d)4v	Is every container arranged so that its identification label is visible?			
7:26-9.4(d)5	Is the container storage area inspected at least daily?			
7:26-9.4(d)6	Are containers holding ignitable and reactive wastes located at least 50 (fifty) feet (15 meters) from the facilities property line?			
7:26-7.2(a)	Did the owner/operator conspicuously label appropriate manifest number on all hazardous waste containers that are intended for shipment?			
7:26-9.3(a)3	Is each container clearly dated with each period of accumulation so as to be visible for inspection?			

YES NO N/A

7:26-7.2(b)

Did the owner/operator insure that all containers used to transport hazardous waste off site are in conformance with applicable DOT regulations? (49CFR 171, 179)

Tanks (Less than 90 day storage)

7:26-9.3(b)

Does the generator accumulate hazardous waste on-site in an above ground tank?

____ ☒ ____

If yes, describe the tank(s):

- 1) Capacity _____
- 2) Shell thickness _____
- 3) Material Construction _____
- 4) Age of tank _____

7:26-9.3(b)

Does the generator have written approval from the Department to store hazardous waste(s) in this tank(s) for ninety days or less?

____ ☒ ____

7:26-9.3(b)1

Does each tank(s) have sufficient shell thickness to ensure the tank will not collapse or rupture as specified by the Department?

7:26-9.3(b)4

Is the tank(s) designed so that at least 99% of the volume of each of the tanks can be emptied by direct pumping or drainage?

7:26-9.3(b)5

Is each tank(s) rendered empty (1% or less remaining) every 90 days or less?

7:26-9.3(b)6

Are all wastes removed from the tank(s) shipped off-site to an authorized facility or placed in an on-site, authorized facility?

7:26-9.3(b)8

If part of the tank is below grade, is it constructed to allow visual inspection of the tank, comparable to a totally above-ground tank and is secondary containment provided for the below grade part?

7:26-10.5(c)1

Are materials which are incompatible with the material of construction of the tank(s) placed in the tank(s)?

7:26-10.5(c)2

Does the generator use appropriate controls and practices to prevent overfilling?

____ ☒ ____

		<u>YES</u>	<u>NO</u>	<u>N/A</u>
7:26-10.5(c)211	For uncovered tanks, is there sufficient (two feet or acceptable documentation) freeboard to prevent overtopping by wave or wind action by or precipitation?	—	—	✓
7:26-9.3(b)3	Does each tank(s) or storage tank area have secondary containment?	—	—	—
7:26-10.5(d)1	Is the containment system capable of collecting and holding spills, leaks, and precipitation?	—	—	—
7:26-10.5(d)11	Is the base underlying the tank(s) free from cracks, gaps, and sufficiently impervious to contain leaks, spills, and accumulated rainfall until the collected material is detected and removed?	—	—	—
7:26-10.5(d)11	Does the containment system consist of material compatible with the wastes being stored?	—	—	—
7:26-10.5(d)111	Is the containment system sloped or otherwise designed to efficiently drain and remove liquids resulting from leaks, spills and precipitation?	—	—	—
7:26-10.5(d)111	Is the tank protected from contact with accumulated liquids?	—	—	—
7:26-10.5(d)iv	Does the containment system have sufficient capacity to contain ten percent of the volume of all tanks or the volume of the largest tanks whichever is greater?	—	—	—
7:26-10.5(d)2	Is run-on into the containment area prevented?	—	—	—
	If not, explain.			
7:26-10.5(d)3	Is precipitation removed from the pump or collection area in a timely manner to prevent blockage or overflow of the collection system?	—	—	—
7:26-10.5(d)4	Is spilled or leaked waste removed from the pump or collection area daily?	—	—	✓

YES NO N/A

7:26-10.5(d)41

If the collected material is hazardous waste under NJAC 7:26-8, it is managed as a hazardous waste in accordance with all applicable requirements of this chapter?

___ ___ ☒

7:26-9.4(g)4

Personnel Training

Have facility personnel successfully completed a program of classroom instruction or on-the-job training since six months after the date of their employment or assignment to the facility or to a new position at the facility?

___ ☒ ___

7:26-9.4(g)5

Has facility personnel taken part in an annual review of initial training?

___ ☒ ___

7:26-9.4(g)2

Is the program directed by a person trained in hazardous waste management procedures and does it include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan to implementation) relevant to the positions in which they are employed?

___ ☒ ___

Is there written documentation of the following:

7:26-9.4(g)61

Job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job?

___ ☒ ___

7:26-9.4(g)611

A written job description for each position related to hazardous waste management?

___ ☒ ___

7:26-9.4(g)6111

A written job description on the type and amount of both introductory and continuing training that has been and will be given to personnel in jobs related to hazardous waste management?

___ ☒ ___

7:26-9.4(g)61v

Documentation of actual training or experience received by personnel?

___ ☒ ___

7:26-9.4(g)7

Are training records kept on all current employees until closure of the facility and training records kept on former employees for three years from their last date of employment?

___ ☒ ___

YES NO N/A

7:26-9.6

Preparedness and prevention

Does the facility comply with preparedness and prevention requirements including maintaining:

7:26-96(b)1

An internal communications or alarm system?

✓

7:26-9.6(b)2

A telephone or other device to summon emergency assistance from local authorities?

✓

7:26-9.6(b)3

Portable fire equipment, spill control equipment, and decontamination equipment?

✓

7:26-9.6(b)4

Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray system?

✓

7:26-9.6(c)

Is equipment tested and maintained?

✓

7:26-9.6(d)1

Is there immediate access to communications or alarm systems during systems during handling of hazardous waste?

✓

7:26-9.6(e)

Adequate aisle space (18") to allow unobstructed movement of personnel fire protection equipment, spill control equipment and decontamination equipment? *no waste on site*

✓

If no, please explain.

In your opinion, do the types of waste on site require all of the above procedures, or are some not required?

✓

Explain.

7:26-9.6(f)

Has the facility made the following arrangements, as appropriate for the type waste handled on site:

✓

7:26-9.6(f)1

Familiarize police, fire departments and emergency response teams with the layout of the facility and hazardous waste handled - associated hazardous places where facility personnel would normally be working, entrances and roads inside facility and possible evacuation routes.

✓

YES NO N/A

- 7:26-9.6(f)2 Where more than one police and fire department might respond to an emergency, is there an agreement designating primary emergency authority to a specific police or fire department, and agreements with any others to provide support to the primary emergency authority? ✓
- 7:26-9.6(f)3 Agreements with emergency response contractors, and equipment supplies? ✓
- 7:26-9.6(f)4 Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosion, or discharges at the facility? *have contract for clinic that they use. They are familiar with*
- 7:26-9.6(f)5 Arrangement with local fire departments to inspect the facility on a regular basis with at least two (2) inspections annually? *K-Hill Clinic, Newark* ✓
- 7:26-9.6(f)6 If authorities identified in (f)1 through 5, above decline to enter into such arrangements, has the owner, or operator documented this refusal in the operating record. ✓
- 7:26-9.4(g)8 Are semi-annual drills conducted involving all employees and appropriate local authorities to test emergency response capabilities at the facility in accordance with the contingency plan and emergency procedures development pursuant to NJAC 7.26-9.7? *They do have drills but not with outside agencies.* ✓
- 7:26-9.4(g)81 If no, did the owner or operator petition the Department for an exemption from the semi annual drills requirement? ✓
- 7:26-9.4(g)811 Did the owner or operator petition the Department for an exemption excluding some or all local officials in the semi annual drill requirements? ✓
- If yes, did the owner operator provide those specific local officials with written approval of the exemption? ✓


YES NO N/A

7:26-9.7

Contingency Plan and Emergency Procedures

7:26-9.7(a)

Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosions, hazards to human health or environment, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents into air, soil or surface water?




7:26-9.7(b)

Are provisions of the plan carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment?

never had to implement

7:26-9.7(c)

Does the contingency plan describes the actions facility personnel shall take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility?



7:26-9.7(d)

Did the owner or operator prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112 or 300 or a Discharge Prevention Containment and Countermeasure (DPCC) Plan in accordance with N.J.A.C. 7:1E-4.1 et seq.



If yes, did the owner or operator amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this section?



7:26-9.7(e)

Does the plan describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services?



YES NO N/A

7:26-9.7(f)

Does the plan list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator and is this list kept up to date? Where more than one person is listed, one shall be named as primary emergency coordinator and others shall be listed in the order in which they will assume responsibility as alternates?

plan doesn't designate who the primary coordinator is.

✓

7:26-9.7(g)

Does the plan include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external) and decontamination equipment), where this equipment is required? Is the list up-to-date? In addition, does the plan include the location and physical description of each item on the list, and a brief outline of its capabilities?

✓

7:26-9.7(h)

Does the plan include an evacuation procedure for facility personnel where there is a possibility that evacuation could be necessary? Does this plan describe signal(s) to be used to begin evacuation, evacuation routes, and alternative evacuation routes (in case where the primary route could be blocked by releases of hazardous waste or fires)?

✓

7:26-9.7(i)

Is a copy of the contingency plan and all revisions to the plan:

1. Maintained at the facility;
2. Has the contingency plan been submitted to local authorities (police fire departments, emergency response teams)?

✓

✓

7:26-9.7(k)

Is there an employee on site or on call at all times with the responsibility of coordinating, all emergency response measures?

✓

RCRA LAND DISPOSAL RESTRICTION INSPECTION

Facility: ADCO CHEMICAL Co.
 U.S. EPA I.D. No.: NTD002154086
 Street: 49 Rutherford St (and Delancy St)
 City: Newark State: N. J. Zip Code: 07105
 Telephone: 201-589-0880

Operator: _____

Street: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____

Owner: _____

Street: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____

Inspection Date: 6/10, 7/8, 7/11/88 Time: _____ Weather Conditions: _____

	<u>Name</u>	<u>Affiliation</u>	<u>Telephone</u>
Inspectors:	<u>Jeffrey Sterling</u>	<u>NTDEP</u>	<u>201-669-3960</u>

Facility Representatives: Steven Holland, ADCO Chem.
ARTHUR L. STRAUBING (consultant)

	<u>RCRA Status</u>	<u>F-Solvent</u>	<u>LDR Status</u> <u>California List</u>
Generator	_____	_____	_____
Transporter	_____	_____	_____
Treater	_____	_____	_____
Storer	_____	_____	_____
Disposer	_____	_____	_____

NO

INSPECTION SUMMARY

Company makes water based resin and solvent based resin. The solvent based resin consist of alkyl resin & solvents which are added to fix the consistency, concentration etc. The company doesn't use any halogenated solvents. They don't generate spent solvents. The solvents used become a part of the product. The solvent based resin are filtered prior to sale. the spent filter media is heated to drive the trapped solvents off. This vaporized solvent is condensed and reused. The filter media, after the solvent is vaporized, is discarded as non-hazardous waste*.

* a sample of it was taken to verify "non-hazardous" status

RCRA LAND DISPOSAL RESTRICTION INSPECTION APPLICABILITY CHECKLIST

Does the facility handle the following wastes?

	Gen.	Treat	Store	Disp.	Trans.
A. <u>F-Solvent Wastes</u>	(NO)				
1. F001	_____	_____	_____	_____	_____
2. F002	_____	_____	_____	_____	_____
3. F003	_____	_____	_____	_____	_____
4. F004	_____	_____	_____	_____	_____
5. F005	_____	_____	_____	_____	_____

Note: Use Appendix A to determine whether the facility is misclassifying any of its wastes.

B. California List Wastes

1. Liquid hazardous waste (including free liquids associated with any solid or sludge) that contains the following metals at concentrations greater than or equal to those specified

(N/A)

		Gen.	Treat	Store	Disp.	Trans.
Arsenic	500 mg/L	_____	_____	_____	_____	_____
Cadmium	100 mg/L	_____	_____	_____	_____	_____
Chromium VI	500 mg/L	_____	_____	_____	_____	_____
Lead	500 mg/L	_____	_____	_____	_____	_____
Mercury	20 mg/L	_____	_____	_____	_____	_____
Nickel	134 mg/L	_____	_____	_____	_____	_____
Selenium	100 mg/L	_____	_____	_____	_____	_____
Thallium	130 mg/L	_____	_____	_____	_____	_____

2. Liquid hazardous waste (including free liquids associated with any solid or sludge) that contains free cyanides at concentrations greater than or equal to 1,000 mg/L

(no)

Gen.	Treat	Store	Disp.	Trans.
_____	_____	_____	_____	_____

3. Liquid hazardous waste that has a pH of less than or equal to 2.0

(no)

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

4. Liquid hazardous waste that contains PCBs at concentrations greater than or equal to

(no)

50 ppm _____	_____	_____	_____	_____
--------------	-------	-------	-------	-------

500 ppm _____	_____	_____	_____	_____
---------------	-------	-------	-------	-------

Does the facility mix liquid hazardous waste that contains PCBs with other types of wastes?

_____ Yes ☒ No _____ NA

If yes, state reasons for mixing:

5. Liquid hazardous waste that is primarily water and that contains HOCs greater than or equal to 1,000 mg/L (dilute HOC wastewater) and less than 10,000 mg/L

(no)

_____	_____	_____	_____	_____
-------	-------	-------	-------	-------

Note: The prohibitions of 268.32(a)(3) and (e) do not apply if the HOC waste is also subject to the solvent restrictions of 268 Subpart C or a specific HOC.

RCRA LAND DISPOSAL RESTRICTION INSPECTION

GENERATOR CHECKLIST

GENERATOR REQUIREMENTS

A. BDAT Treatability Group - Treatment Standards Identification

1. F-Solvent Wastes: Does the generator correctly determine the appropriate treatability group of the waste?

_____ Yes ☒ No _____ NA

If yes, check the appropriate treatability group.

- _____ Wastewaters containing solvents (less than or equal to 1% TOC by weight)
_____ Pharmaceutical wastewater containing spent methylene chloride
_____ All other spent solvent wastes

2. California List Wastes: Does the generator correctly determine the appropriate treatment standard of the waste?

- a. For liquid hazardous waste that contains PCBs at concentrations greater than or equal to 50 but less 500 ppm, is the treatment in accordance with existing TSCA thermal treatment regulations for burning in high efficiency boilers (40 CFR 761.60) or incineration (40 CFR 761.70)?

_____ Yes _____ No _____ NA

If yes, specify the method: _____

- b. For liquid hazardous waste that contains PCBs at concentrations greater than or equal to 500 ppm, is the waste incinerated or disposed of by other approved alternate methods (40 CFR 761.60 (e))?

_____ Yes _____ No _____ NA

If yes, specify the method and state whether the facility has submitted a written request to the Regional Administrator or Assistant Administrator for an exemption from the incineration requirement:

GEN

B. Waste Analysis

1. F-Solvent Wastes

Don't generate most solvents

- a. Does the generator determine whether the F-solvent waste exceeds treatment standards?

____ Yes ____ No ____ NA

How was this determination made?

- Knowledge of waste

____ Yes ____ No

If yes, note how this is adequate: _____

- TCLP

____ Yes ____ No

If yes, provide the date of last test, the frequency of testing, and note any problems. Attach test results.

- b. Does the F-solvent waste exceed applicable treatability group treatment standards upon generation [268.7(a)(2)]?

____ Yes ____ No ____ NA

If yes, specify the waste stream: _____

- c. Does the generator dilute the F-solvent waste as a substitute for adequate treatment [268.3]?

____ Yes ____ No ____ NA

- d. How does the generator test F-solvent waste when a process or waste stream changes?

2. California List Wastes

- a. Does the generator determine whether the waste is a liquid according to the Paint Filter Liquids Test (PFLT method 9095) as described by SW-846?

____ Yes ____ No ____ NA

- b. If the waste is determined to be a liquid according to PFLT, is an absorbent added to the waste?

_____ Yes _____ No _____ NA

What type of absorbent is used? _____

Check the types of waste to which absorbent is added.

- _____ Liquid hazardous waste having a pH less than or equal to 2
- _____ Liquid hazardous waste containing HOCs in concentrations greater than or equal to 1,000 mg/L, but less than 10,000 mg/L
- _____ Liquid hazardous waste containing metals
- _____ Liquid hazardous waste containing free cyanides

- c. Does the generator determine whether the concentration levels (not extract or filtrate) in the waste equal or exceed the prohibition levels or whether the waste has a pH of less than or equal to 2.0 based on:

- Knowledge of wastes

_____ Yes _____ No _____ NA

If yes, note how this is adequate: _____

- Testing

_____ Yes _____ No _____ NA

If yes, list test method used: _____

- d. Does the generator determine if concentration levels in PFLT extract exceed cyanide and metals concentration levels?

_____ Yes _____ No _____ NA

- If yes, list test method used and constituent and concentration levels that exceeded prohibition levels: _____

- e. Does the generator dilute the waste as a substitute for adequate treatment [268.3]?

_____ Yes _____ No _____ NA

C. Management**1. On-Site Management**

Is waste that exceeds the treatment standards treated, stored, or disposed on-site?

_____ Yes _____ No

If yes, the TSD Checklist must be completed.

2. Off-Site Management

- a. Does the generator ship any waste that exceeds the treatment standards to an off-site treatment or storage facility?

_____ Yes _____ No

If yes, does the generator provide notification to the treatment or storage facility [268.7(a)(1)]?

_____ Yes _____ No

If yes, does notification contain the following?

EPA Hazardous waste number(s) _____ Yes _____ No

Applicable treatment standards _____ Yes _____ No

Manifest number _____ Yes _____ No

Waste analysis data, if available _____ Yes _____ No

Identify off-site treatment or storage facilities: _____

- b. Does the generator ship any waste that meets the treatment standards to an off-site disposal facility?

_____ Yes _____ No

If yes, does the generator provide notification and certification to the disposal facility [268.7(a)(2)]?

_____ Yes _____ No

GEN

If yes, does notification contain the following?

EPA Hazardous waste number(s)	_____ Yes	_____ No
Applicable treatment standards	_____ Yes	_____ No
Manifest number	_____ Yes	_____ No
Waste analysis data, if available	_____ Yes	_____ No
Certification that the waste meets treatment standards	_____ Yes	_____ No

Identify off-site land disposal facilities: _____

- c. If the waste is subject to a nationwide variance (e.g., solvent-water mixtures less than 1%), extension (268.5), or petition (268.6), does the generator provide notification to the off-site disposal facility that the waste is exempt from land disposal restrictions [268.7(a)(3)]?

_____ Yes _____ No _____ NA

D. Treatment Using RCRA 264/265 Exempt Units or Processes
(i.e., boilers, furnaces, distillation units, wastewater treatment tanks, elementary neutralization, etc.)

Are treatment residuals generated from units or processes exempt under RCRA 264/265?

_____ Yes _____ No

If yes, list types of waste treatment units and processes:

TRANS

RCRA LAND DISPOSAL RESTRICTION INSPECTION

TRANSPORTER CHECKLIST

TRANSPORTER REQUIREMENTS

- A. Does the transporter accumulate waste for more than 10 days [268.50(A)(3)]?

_____ Yes _____ No

If yes, check the appropriate regulatory status:

_____ Interim status for storage

_____ RCRA permit for storage

If no, describe inventory controls to ensure that wastes are not stored for more than 10 days: _____

- B. Does the transporter mix, combine, or recontainerize wastes?

_____ Yes _____ No

- C. Is the waste treated in an exempt treatment process on-site?

_____ Yes _____ No

CONFIDENTIAL - RECOMMENDATIONS

TO: File: 07-14-52

FROM: J. Sterling thru Y. YACOUR DATE: 7-21-88

SUBJECT: Adco Chemical Co. NJD002154086.
RCRA inspection on 7/11/88.

① Adco originally filed as a TSD in 1980. They claimed that they never conducted any hazardous waste treatment activities, as their Part A application implied. In essence, they had filed protectively. The NJDEP reclassified this facility to generator status in 1983.

② The company used to manifest their filter residues as a hazardous waste (due to solvent contamination) prior to the acquisition of their solvent recovery device in 1987. The solvent tainted filter residues are now ground up and placed into the recovery device to which heats up the residues to cause the solvents to vaporize from them. The vaporized solvent is collected, chilled, and reused. The company maintains that this recovered solvent was not a spent solvent prior to being recovered.

This solvent contaminated residue, a waste, is not considered as such by Adco. They consider it to be "in process" material. As such, the containers used to accumulate these residues (diatomaceous earth filter paper or cloth, etc.) are not labeled, dated, stored with proper waste space, etc. The company

TO: File 07-14-52
FROM: J. Sterling thru T. Yacono DATE: 7-21-88
SUBJECT: Adco Chem. Co.

generate a lot of this waste material (about 60 x 30 gal sized ~~drum~~ drums/month; each drum \approx 200 lb).

Adco's claim that the treated residue was non-hazardous couldn't be verified during the inspection so a sample of it was taken. It will be analyzed to determine whether or not it is a hazardous waste. In the meantime, Adco disposes of it as non-hazardous.

- ③ Evidences of spillage was observed in the yard and in their warehouse. The tank farm (solvent) showed visual evidence of spill (hence samples were taken from the solvent tank farm). Spillage of vegetable oil (per Adco) were observed beneath the rail cars. Samples were taken from beneath one of the rail cars to verify that what was spilled. Appropriate action will be taken if the sample(s) should reveal that they are hazardous wastes.

Adco was asked to improve their sloppy housekeeping.

- ④ Adco will be advised in the near future to manage their "in process" filter residues which are solvent contaminated as hazardous wastes.

CONFIDENTIAL - RECOMMENDATIONS

TO: 07-14-52
FROM: J. STERLING DATE: 7-21-88
SUBJECT: Adco Chemical Company

regardless of whether or not they treat ^{from} ~~at~~ onsite.
They'll also be advised to observe the 90 day
limit on the storage of the filter residues.
(Reference 77JAC 7:26-1.6(b), 9.1(c)(10))

print or type. (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (3-84) Form Approved. OMB No. 2000-0404. Expires 7-31-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. **N J D00 2 1 5 4 0 8 6** Manifest Document No. **0 0 0 0 2** 2. Page 1 of 1 Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address **DC Site 49 Rutherford St. Adco Chemical Co. Newark, N.J. 07105 P.O. Box 128 Newark, N.J. 07101-0128** A. Illinois Manifest Document Number **IL 1286013**
4. Generator's Phone (**201 -**) **589-0880 DC** B. Illinois Generator's ID **9 3 4 0 1 3 5 0 3 8**

5. Transporter 1 Company Name **Price Trucking Company** 6. US EPA ID Number **N Y D 0 4 6 7 6 5 5 7 4** C. Illinois Transporter's ID **1 2 3 4** D. (766) 822-1414 Transporter's Phone
7. Transporter 2 Company Name 8. US EPA ID Number E. Illinois Transporter's ID F. () Transporter's Phone

9. Designated Facility Name and Site Address **SCA CHEMICAL SERVICES INC. 11700 S. Stony Island Chicago, Ill. 60017** 10. US EPA ID Number **I L D 0 0 0 6 7 2 1 2 1** G. Illinois Facility's ID **0 3 1 6 0 0 0 0 5 8** H. Facility's Phone **(312) 646-5700**

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) 12. Containers No. Type 13. Total Quantity 14. Unit Wt/Vol I. Waste No.
a. **HM** Waste Flammable Solid NOS EPA HW Number **D 0 0 1**
Y Flammable Solid UN 1325 Authorization Number **0 9 0 0 0 4**
b. EPA HW Number
c. Authorization Number
d. EPA HW Number
e. Authorization Number

Unless I am a small quantity generator that has been exempted by statute regulation from the duty of making a waste minimization certification under section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree have determined to be economically practicable and have selected the method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment.

J. Additional Descriptions for Materials Listed Above **Alkyd Resin Filter Cake, Mineral Spirit or Xylol and Filter Bags.** K. Handling Codes for Wastes Listed Above In Item #14: 1 = Gallons 2 = Cubic Yards **1195-001 Incineration**

15. Special Handling Instructions and Additional Information **Completed Copy to New Jersey Department of Environmental Protection 32 East Hanover St., Trenton, N. J. 08625** **W-85-3677**

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations, and Illinois regulations.

Printed/Typed Name **Ralph H. Everett** Signature **Ralph H. Everett** Date **0 1 0 3 1 8 6**

17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name **Alfred Hunter** Signature **Alfred Hunter** Date **0 1 0 3 1 8**

18. Transporter 2 Acknowledgement or Receipt of Materials Printed/Typed Name Signature Date

19. Discrepancy Indication Space **T** **TAX \$36.36**

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Printed/Typed Name **EL62103 DARLENE J. CATBARI** Signature **Darlene J. Catbari** Date

adco file

APPENDIX A

STRAUBING & RUBIN
CONSULTING ENGINEERS

6 SOUTH ORANGE AVENUE
SOUTH ORANGE, N. J. 07079

(201) 762-5950
TELEX NO. 138196

CERTIFIED MAIL RRR #P14 3689194

January 3, 1983

Dr. Richard Baker
Permits Administration Branch
Room 432
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10007

Re: Adco Chemical Company, Newark, NJ
EPA Id. Nbr. NJD 002154086
S & R Project C-1760

Dear Dr. Baker:

We have been retained by Adco Chemical Company to assist them in refiling their EPA form 8700-12 and 3510-1.

In a recent review of the operation of the Adco Chemical Company located at the corner of Delancy and Rutherford Streets in the City of Newark, New Jersey, it was determined that they are "Generators" only and not a "TS&D" facility. When Adco originally registered they had listed themselves as a TS&D facility when in fact they are not.

The new application attached hereto reflects this request for change in status.

Should there be any questions regarding the foregoing it would be appreciated if you could contact the undersigned. Thank you.

Very truly yours,

STRAUBING & RUBIN

Arthur L. Straubing
Arthur L. Straubing, P.E.

ALS:bmc
Attachment

cc: Mr. W. G. Parker
Mr. S. Holland
Mr. Frank Coolick - DEP

Appendix B



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
32 E. Hanover St., CN 027, Trenton, N.J. 08625

JACK STANTON
DIRECTOR

03 MAR 1983

LINO F. PEREIRA
DEPUTY DIRECTOR

Adco Chemical Company
Robert Harvie
PO Box 128
Newark, NJ 07101

RE: Facility Operating Status

Dear Sir:

The Bureau of Hazardous Waste Engineering has reviewed your company's response to the Notice of Violation, Failure to Submit Annual Report. The Bureau finds that the response contains adequate information to determine the operating status of this facility with respect to N.J.A.C. 7:26-1 et seq., the New Jersey Hazardous Waste Management Regulations. The Bureau has determined that the company's hazardous waste treatment, storage or disposal facility as delineated in the company's RCRA Part A application and identified by the following EPA ID Number:

EPA ID NO. NJD 002154086

has been excluded from regulations under N.J.A.C. 7:26-1.1 et seq. because your facility accumulates hazardous waste on-site for less than 90 days. This exclusion classifies your facility solely as a generator provided the following conditions are complied with:

1. All such waste is, within 90 days or less, shipped off-site to an authorized facility or placed in an on-site authorized facility, as defined at N.J.A.C. 7:26-1.4.
2. The waste is placed in containers which meet the standards of N.J.A.C. 7:26-7.2 and are managed in accordance with N.J.A.C. 7:26-9.4(d).
3. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container.
4. The generator complies with the requirements for owners and operators of N.J.A.C. 7:26-9.6 and 9.7 concerning preparedness and prevention, contingency plans and emergency procedures as well as N.J.A.C. 7:26-9.4(g) concerning personnel training.

5. For bulk accumulation of dry hazardous waste materials, the waste pile is managed according to the following:
- (i) The waste pile is no larger than 200 cubic yards; and
 - (ii) The pile shall be placed on an impermeable base that is compatible with the waste; and
 - (iii) Run-on shall be diverted away from the pile; and
 - (iv) Any leachate and run-off from the pile must be collected and managed as a hazardous waste.

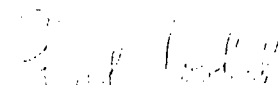
This written acknowledgement of the exclusion of the above identified facility from N.J.A.C. 7:26-1 et seq. is based expressly on the review of the aforementioned correspondence. This letter makes no claim as to the extent and physical condition of the actual hazardous waste activities occurring at the site mentioned above.

Your company's hazardous waste facility above is no longer included in DEP's list of "existing facilities" (see N.J.A.C. 7:26-1.4 and 12.3) and therefore does not need to conform with the interim operating requirements of N.J.A.C. 7:26-1 et seq. for "existing facilities" which would include the TSD facility annual report. It is the company's responsibility to operate within the conditions listed above. To operate a hazardous waste facility without prior approval from the DEP is a violation of the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq.

As a result of the conclusions previously made, the Notice of Violation entitled "Failure to Submit Annual Report" signed by Mr. David Shotwell is rescinded and need not be complied with.

If you have any questions on this matter, please call my office at (609) 292-9880.

Very truly yours,


Frank Coolick, Chief
Bureau of Hazardous Waste Engineering

FC:jb

cc Dave Shotwell
NJDEP, Division of Waste Management

Tom Taccone
USEPA, Region II

INVENTORY LIST

Facility Name: ADCO CHEMICAL CO.
Location: 49 Rutherford Street
 Newark, NJ 07105

NJEIN: 03824600000

<u>SUBSTANCE NAME</u>	<u>CAS NUMBER</u>	<u>HAZARD CATEGORY(IES)*</u>
Acetylene	74-86-2	68, 69, 70
Air, Compressed	- - - - -	69
Ammonium, Hydroxide	1336-21-6	67
Benzine	8030-30-6	70
Benzoic Acid	65-85-0	67
Butyl Acrylate	141-32-2	68
tert-Butyl Hydroperoxide Solution	- - - - -	70, 68
Dipropylene Glycol Methyl Ether	34590-94-8	70, 67
Carbon Dioxide	124-38-9	69
Driers, Paint or Varnish, Liquid, N.O.S.	- - - - -	- - - - -
Ethylene Glycol	107-21-1	
Ethyleneimine	151-56-4	66, 68, 70, 67
Fuel Oil	- - - - -	- - - - -
Fumaric Acid	110-17-8	- - - - -
Gasoline	8006-61-9	70
Hydrogen Chloride	7647-01-0	67
Lithium Carbonate	554-13-2	- - - - -
Lithium Hydroxide Monohydrate	1310-66-3	67
Methacrylic Acid	79-41-4	67, 68
Methyl Alcohol	67-56-1	70
Methyl Methacrylate	80-62-6	70, 68

<u>SUBSTANCE NAME</u>	<u>CAS NUMBER</u>	<u>HAZARD CATEGORY(IES)</u>
Methyl Propyl Ketone	107-87-9	70
Nitrogen	7727-37-9	69
Nonflammable Gas, N.O.S. - - - -		69
Oxygen	7782-44-7	69
Phosphoric Acid	7664-38-2	67
Phthalic Anhydride	85-44-9	67
Potassium Hydroxide	1310-58-3	67
Propane	74-98-6	70, 69
Propylene Glycol Monomethyl Ether	107-98-2	70
Resin Solution	- - - -	- - - -
Sodium Hydroxide	7775-27-1	67
Sodium Metabisulfite	7681-57-4	
Sodium Persulfate	7775-27-1	
Toluene	108-88-3	70
Toluene-2,4 Diisocyanate	584-84-9	66, 67
Toluene-2,6 Diisocyanate	91-08-7	66, 67
Trimellitic Anhydride	552-30-7	
Vinyl Acetate	108-05-4	70, 68
Xylenes	1330-20-7	70

*CODE OF HAZARD CATEGORIES

70 Fire Hazard

69 Sudden Release of Pressure

68 Reactive

67 Acute Health Hazard

66 Delayed Health Hazard

STRAUBING & ROBIN
CONSULTING ENGINEERS

APPENDIX C

6 SOUTH ORANGE AVENUE
SOUTH ORANGE, N.J. 07079

(201) 762-5950

December 15, 1987

Bureau of Hazardous Waste
Planning and Classification
Division of Waste Management - NJDEP
32 E. Hanover Street
Trenton, NJ 08625

Subject: Waste Classification Request

Attn: Mr. Kurt Whitford

Ref: S&R Project 2324

Gentlemen:

We are requesting re-classification of an industrial waste product on behalf of Adco Chemical Company, 49 Rutherford Street, Newark, NJ. The following information for this purpose is included:

- a) Description of Waste & Quantity Generated
- b) Description of Process Generating Waste
- c) Laboratory Report of Analysis by
Princeton Testing Laboratory, Princeton, NJ
- d) Signed statement by Generator regarding pesticides and herbicides.

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Bureau of Hazardous Waste
Attn: Mr. Kurt Whitford

December 15, 1987
Page 2

Waste Description

The waste to be reclassified results from a filtration operation. The product being manufactured (described below) is an alkyd resin dissolved in a hydrocarbon solvent which has a flash point of less than 140°F. At the conclusion of the manufacturing process, the product has particulate matter consisting of unreacted resin, dust and solvent insolubles. These "particulates" affect the clarity of the solids and must be filtered out to permit the resin to meet product specifications.

Filtration is carried out either in a plate and frame filter press utilizing filter paper and diatomaceous earth as the filtration media or alternatively, a bag filter utilizing a woven filter bag and again diatomaceous earth as the filtration medium.

The filter media traps the non-soluble particulates from the soluble resin product and in so doing becomes saturated with both the resin and solvent.

The filter press (or bag filter) is then "blown" with a pressurized inert gas to remove as much free resin-solvent liquid. At the end of the "blow" period, the filter cake is saturated with adsorbed resin, solvent, and contains non-soluble particles as described above. The resin is not hazardous, nor are the particulates, the solvent is flammable and consequently, heretofore, this filter cake was classified as being hazardous by nature of its flammability. Approximately 25,000 pounds per year of this filter cake is generated at Adco. The following process is proposed to be used to achieve reduction in accordance with Government/State directives to reduce the amount of hazardous waste being disposed of as well as recovering a valuable material i. e. the solvent as a recyclable material.

Recycling Scheme

This waste, filter paper, fabric and filter aid, contains solvent and traces of resin. It is put through a process which reclaims the solvent. No additional chemicals are added during this process. The "final waste" obtained after removal of solvent in the process has a flash point greater than 200°F. Actual tests have recorded flash points greater than 230°F.

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CONSULTING ENGINEERS

Bureau of Hazardous Waste
Attn: Mr. Kurt Whitford

December 15, 1987
Page 3

Samples of the processed waste material obtained in actual plant scale runs were forwarded to Princeton Testing Laboratory, Princeton, New Jersey for analysis. Analysis was made using the RCRA method according to the Federal Register May 19, 1980. A "Report of Analysis", dated 11-4-87 is appended.

Manufacturing Process

The process during which this waste is generated is the production of alkyd resins. These resins are organic esters formed by the reaction of a polybasic acid or anhydride (phthalic anhydride) with a polyol (glycerine). The reaction forms the ester and water. The reaction is reversible and therefore the water is removed to drive the reaction to completion. The reaction is carried out in the presence of a small amount of solvent (Xylol) and an oil (such as soya or linseed). The oil, containing fatty acids, is a modifying agent. The performance properties of the resin, such as drying time, hardness, water resistance, are varied depending upon the oil used.

The raw materials used in the production of the various alkyd resins include:

- Phthalic Anhydride
- Glycerine
- Diethylene Glycol
- Tall Oil Fatty Acid
- Soya Bean Oil
- Linseed Oil
- Safflower Oil
- Coconut Oil
- Tung Oil
- Fish Oil
- Xylol

Production is on a batch basis, the reaction is carried out in an agitated, jacketed reactor which is heated and cooled as required during the batch cycle. When the reaction is complete, the batch is transferred to a "thinning tank". The resin is dissolved in a solvent to a concentration ranging from 40 to 60% solids (resin). Solvents used include:

STRAUBING & RUBIN

CONSULTING ENGINEERS

Bureau of Hazardous Waste
Attn: Mr. Kurt Whitford

December 15, 1987
Page 4

Mineral Spirits
Odorless Mineral Spirits
Xylol
VMP Naphtha
High Flash Naphtha

It is at this point in the process that the "thinned" resin is filtered. The resin is not a hazardous material. The resin is pumped through a filter press, or alternatively through a cartridge filter, and transferred to a post-filtration tank. It is then pumped to finished product storage tanks where it is held for shipment. The filter paper from the filter press and/or the fabric filter bags from the cartridge filter together with diatomaceous earth and particulates consisting of dust, triglycerides and glycerol esters which represent less than 0.5% (estimated) of the total solids in the material to be processed make up the waste material under consideration. None of the foregoing materials are classified as hazardous. This waste material is then processed as described previously.

We trust that the descriptions and data herein contained will permit the classification of this material as a non-hazardous waste suitable for ordinary waste disposal methods.

Very truly yours,

STRAUBING & RUBIN

Pradeep Lamba

Pradeep Lamba, Ph.D.

PL:rsc
4206A

Princeton Service Center
Box 3108
Princeton, NJ 08540
Tel: 609-527-0050
Fax: 609-527-0492



princeton
testing
laboratory



P.O. Box 3108, Princeton, N.J. 08540

DATE: 11-4-87

TO: [

JOB NO. 87GW3917

Straubing and Rubin
6 South Ave
South Orange NJ 07079
Attn: Mark Polifroni

AUTHORIZATION:

SAMPLE: Soil-1

REPORT OF ANALYSIS

Ep Toxicity

Soil - Rekra Drier

Arsenic	<0.01
Barium	0.13
Cadmium	<0.01
Chromium	<0.02
Lead	<0.02
Mercury	<0.001
Selenium	<0.01
Silver	<0.01
Ignitability	>200°F
Corrosivity	8.60
Total Petroleum Hydrocarbons	250 mg/kg

Note: RCRA Method employed according to Federal Register
May 19, 1980.

Reactivity Test

Sulfide	<1.0
Cyanide	<1.0

Received: 10-13-87

Edna A. Alinea

Edna A. Alinea, Manager
Water, Wastewater and Microbiology

William J. Pickup, Director

PRINCETON SERVICE CENTER

Route 1
909-452-9050
909-452-4492



P.O. Box 3108, Princeton, N.J. 08540



Environmental
Analysis

SAMPLE ANALYSIS REPORT

For Straubing & Rubin
6 South Avenue
South Orange, NJ 07079

Attention: Mark Polifroni

Report Date: 10/27/87

Job No.: 87GW3917

Date Received: 10/13/87

Units: MG/KG

TEST PERFORMED: PCB'S - Non-Aqueous - Method 8080

COMPOUND	DET LMTS	SAMPLE
12674-11-2 Aroclor 1016	5.0 ug/kg	ND
11104-28-2 Aroclor 1221	5.0 ug/kg	ND
11141-16-5 Aroclor 1232	5.0 ug/kg	ND
53469-21-9 Aroclor 1242	5.0 ug/kg	ND
12672-29-6 Aroclor 1248	5.0 ug/kg	ND
11097-69-1 Aroclor 1254	5.0 ug/kg	ND
11096-82-5 Aroclor 1260	5.0 ug/kg	ND

SURROGATE RECOVERY DATA
% RECOVERY

Dibutylchloroendate

QC LIMITS

20-150

N/A

DATE ANALYZED:

10/21/87

NOTE: These QC Limits are
suggested guidelines set by
the US EPA.

Charles Corcoran, Manager, Organic Lab.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

INSTRUCTIONS: If you received a preprinted label, affix it in the space at left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Items I, II, and III below blank. If you did not receive a preprinted label, complete all items. "Installation" means a single site where hazardous waste is generated, treated, stored and/or disposed of, or a transporter's principal place of business. Please refer to the INSTRUCTIONS FOR FILING NOTIFICATION before completing this form. The information requested herein is required by law (Section 3010 of the Resource Conservation and Recovery Act).

INSTALLATION'S EPA I.D. NO. FNJD 002154086

I. NAME OF INSTALLATION Adco Chemical Company

II. INSTALLATION MAILING ADDRESS P. O. Box 128
Newark, N.J. 07101

III. LOCATION OF INSTALLATION 49 Rutherford St.
Newark, N.J. 07105

FOR OFFICIAL USE ONLY

COMMENTS

INSTALLATION'S EPA I.D. NUMBER

APPROVED

DATE RECEIVED
(yr., mo., & day)

FNJD 002154086

T/A C
631

800818

I. NAME OF INSTALLATION

Adco Chemical Co.

II. INSTALLATION MAILING ADDRESS

STREET OR P.O. BOX

P.O. Box 128

CITY OR TOWN

Newark

ST.

N.J.

ZIP CODE

07101

III. LOCATION OF INSTALLATION

STREET OR ROUTE NUMBER

49 Rutherford St.

CITY OR TOWN

Newark

ST.

N.J.

ZIP CODE

07105

IV. INSTALLATION CONTACT

NAME AND TITLE (last, first, & job title)

Mr. Robert Harvie

PHONE NO. (area code & no.)

201-589-0880

V. OWNERSHIP

A. NAME OF INSTALLATION'S LEGAL OWNER

Adco Chemical Company

B. TYPE OF OWNERSHIP
(enter the appropriate letter into box)F = FEDERAL
M = NON-FEDERAL

M

VI. TYPE OF HAZARDOUS WASTE ACTIVITY (enter "X" in the appropriate box(es))

☒ A. GENERATION☐ B. TRANSPORTATION (complete item VII)☒ C. TREAT/STORE/DISPOSE☐ D. UNDERGROUND INJECTION

VII. MODE OF TRANSPORTATION (transporters only - enter "X" in the appropriate box(es))

☐ A. AIR☐ B. RAIL☐ C. HIGHWAY☐ D. WATER☐ E. OTHER (specify):

VIII. FIRST OR SUBSEQUENT NOTIFICATION

Mark "X" in the appropriate box to indicate whether this is your installation's first notification of hazardous waste activity or a subsequent notification. If this is not your first notification, enter your Installation's EPA I.D. Number in the space provided below.

☒ A. FIRST NOTIFICATION☐ B. SUBSEQUENT NOTIFICATION (complete item C)

C. INSTALLATION'S EPA I.D. NO.

IX. DESCRIPTION OF HAZARDOUS WASTES

Please go to the reverse of this form and provide the requested information.

I.D. - FOR OFFICIAL USE ONLY															
9	W	N	J	D	0	0	2	1	5	9	0	8	6	2	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

IX. DESCRIPTION OF HAZARDOUS WASTES (continued from front)

A. HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.31 for each listed hazardous waste from non-specific sources your installation handles. Use additional sheets if necessary.

1 F 0 0 3 23 - 26	2 F 0 0 5 23 - 26	3 23 - 26	4 23 - 26	5 23 - 26	6 23 - 26
7 23 - 26	8 23 - 26	9 23 - 26	10 23 - 26	11 23 - 26	12 23 - 26

B. HAZARDOUS WASTES FROM SPECIFIC SOURCES. Enter the four-digit number from 40 CFR Part 261.32 for each listed hazardous waste from specific industrial sources your installation handles. Use additional sheets if necessary.

13 23 - 26	14 23 - 26	15 23 - 26	16 23 - 26	17 23 - 26	18 23 - 26
19 23 - 26	20 23 - 26	21 23 - 26	22 23 - 26	23 23 - 26	24 23 - 26
25 23 - 26	26 23 - 26	27 23 - 26	28 23 - 26	29 23 - 26	30 23 - 26

C. COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES. Enter the four-digit number from 40 CFR Part 261.33 for each chemical substance your installation handles which may be a hazardous waste. Use additional sheets if necessary.

31 P 0 5 4 23 - 26	32 P 0 9 2 23 - 26	33 U 1 1 3 23 - 26	34 U 1 4 7 23 - 26	35 U 1 5 4 23 - 26	36 U 1 6 2 23 - 26
37 U 1 9 0 23 - 26	38 U 2 2 0 23 - 26	39 U 2 2 3 23 - 26	40 U 2 3 8 23 - 26	41 U 2 3 9 23 - 26	42 D 0 0 8 23 - 26
43 23 - 26	44 23 - 26	45 23 - 26	46 23 - 26	47 23 - 26	48 23 - 26

D. LISTED INFECTIOUS WASTES. Enter the four-digit number from 40 CFR Part 261.34 for each listed hazardous waste from hospitals, veterinary hospitals, medical and research laboratories your installation handles. Use additional sheets if necessary.

49 23 - 26	50 23 - 26	51 23 - 26	52 23 - 26	53 23 - 26	54 23 - 26
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E. CHARACTERISTICS OF NON-LISTED HAZARDOUS WASTES. Mark "X" in the boxes corresponding to the characteristics of non-listed hazardous wastes your installation handles. (See 40 CFR Parts 261.21 - 261.24.)

☒ 1. IGNITABLE
(D001)

☒ 2. CORROSIVE
(D002)

☒ 3. REACTIVE
(D003)

☒ 4. TOXIC
(D000)

X. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE 	NAME & OFFICIAL TITLE (type or print) W GEORGE PARKER PRES	DATE SIGNED 8/15/80
--	---	------------------------



FORM 1 GENERAL		U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION <i>Consolidated Permits Program</i> (Read the "General Instructions" before starting.)		I. EPA I.D. NUMBER				
<div style="text-align: center; font-weight: bold; font-size: 1.2em;">EPA</div> <div style="text-align: center; font-weight: bold; font-size: 1.5em;">PLEASE PLACE LABEL IN THIS SPACE</div>		GENERAL INSTRUCTIONS		F N J D 0 0 2 1 5 4 0 8 6 3 C				
		If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.		1 2 3 4 5				
II. POLLUTANT CHARACTERISTICS		INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.						
SPECIFIC QUESTIONS						MARK 'X'		
						YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)						<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
III. NAME OF FACILITY								
1 SKIP Ad c O C h e m i c a l C o m p a n y								
IV. FACILITY CONTACT								
A. NAME & TITLE (last, first, & title) B. PHONE (area code & no.)								
2 R o b e r t H a r v i e 2 0 1 5 8 9 0 8 8 0								
V. FACILITY MAILING ADDRESS								
A. STREET OR P.O. BOX B. CITY OR TOWN C. STATE D. ZIP CODE								
3 P O B o x 1 2 8 N e w a r k N J 0 7 1 0 1								
VI. FACILITY LOCATION								
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER B. COUNTY NAME C. CITY OR TOWN D. STATE E. ZIP CODE F. COUNTY CODE (if known)								
5 D e l a n c y & R u t h e r f o r d S t. E s s e x N e w a r k N J 0 7 1 0 5								

II. SIC CODES (4-digit, in order of priority)

A. FIRST										B. SECOND											
C	2	8	6	9	(specify)						C	7	(specify)								
15	16	17	18	19											15	16	17	18	19		
C. THIRD										D. FOURTH											
C	(specify)									C	(specify)										
15	16	17	18	19											15	16	17	18	19		

III. OPERATOR INFORMATION

A. NAME																														B. Is the name listed in Item VIII-A also the owner?									
A dc 0 Chemical Company																														<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO									

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL
S = STATE
P = PRIVATE

M = PUBLIC (other than federal or state)
O = OTHER (specify)

P (specify)

D. PHONE (area code & no.)

C	2	0	1	5	8	0	8	8	0
A	15	16	17	18	19	20	21	22	23

E. STREET OR P.O. BOX

0 Box 128																													

F. CITY OR TOWN

Newark																													

G. STATE

H. ZIP CODE

NJ 07101									

IX. INDIAN LAND

Is the facility located on Indian lands?

☐ YES ☐ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)															D. PSD (Air Emissions from Proposed Sources)																								
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9	P																																						
B. UIC (Underground Injection of Fluids)															E. OTHER (specify)																								
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9																																							
C. RCRA (Hazardous Wastes)															E. OTHER (specify)																								
<table border="1"> <tr><td>T</td><td>I</td></tr> <tr><td>R</td><td></td></tr> </table>															T	I	R		<table border="1"> <tr><td>C</td><td>T</td><td>I</td></tr> <tr><td>9</td><td></td><td></td></tr> </table>															C	T	I	9		
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C	T	I																																					
9																																							

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

F4: A/50

I. NATURE OF BUSINESS (provide a brief description)

Production of polymers reduced in water or petroleum solvents.

II. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME & OFFICIAL TITLE (type or print)															B. SIGNATURE															C. DATE SIGNED									
W. George Parker																														11/19/80									

COMMENTS FOR OFFICIAL USE ONLY

EPA

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

NUMBER

N J D O Q 2 1 5 4 0 8 6

SPECIAL USE ONLY

DATE RECEIVED
(Yr., Mo., & day)

COMMENTS

FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

FIRST APPLICATION (place an "X" below and provide the appropriate date)

☒ 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

☐ 2. NEW FACILITY (Complete item below.)

FOR NEW FACILITIES,
PROVIDE THE DATE
(yr., mo., & day) OPERA-
TION BEGAN OR IS
EXPECTED TO BEGIN

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day)
OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED
(use the boxes to the left)

B. REVISED APPLICATION (place an "X" below and complete item I above)

☐ 1. FACILITY HAS INTERIM STATUS

☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES - CODES AND DESIGN CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-Feet (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or inciner- ators. Describe the processes in the space provided; Item III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-Feet	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP

T A C
1 1 1

B. PROCESS DESIGN CAPACITY			FOR OFFICIAL USE ONLY	LINE NUMBER	B. PROCESS DESIGN CAPACITY			FOR OFFICIAL USE ONLY
A. PRO- CESS CODE (from list above)	1. AMOUNT (specify)	2. UNIT OF MEA- SURE (enter code)			A. PRO- CESS CODE (from list above)	1. AMOUNT	2. UNIT OF MEA- SURE (enter code)	
X-1 S 0 2	600	G		5				
X-2 T 0 3	20	E		6				
1 S 0 1	5500 00 0	G		7				
2 S 0 2	4000 00 0	G		8				
3 T 0 1	4000 00 0	U		9				
				10				

Continued from the front.

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE, INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

EPA HAZARDOUS WASTE NUMBER — Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

ESTIMATED ANNUAL QUANTITY — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

UNIT OF MEASURE — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE
POUNDS	P
TONS	T

METRIC UNIT OF MEASURE	CODE
KILOGRAMS	K
METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARDOUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES	
				1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a process is not listed in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

2. this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

002154086

DESCRIPTION OF HAZARDOUS WASTE (continued)

A. EPA HAZARD WASTE NO. (enter code)			B. ESTIMATED ANNUAL QUANTITY OF WASTE		C. RCRA CODE		D. RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CODE					E. DESCRIPTION OF WASTE			
1	2	3	4	5	6	7	8	9	10	11	12	13			
1	D	00	1	15000	G	S	0	1	S	0	2	T	0	1	Material is recovered as a raw material.
2	F	0	0	3											Included with above
3	U	2	3	9											Included with above
4	D	0	0	1	1000	G	S	0	1						
5	F	0	0	3											Included with above
6	U	2	3	9											Included with above
7	D	0	0	1	5000	G	S	0	1						
8	F	0	0	3											Included with above
9	U	2	3	9											Included with above
10	D	0	0	8											Included with above
11	D	0	0	1	3000	G	S	0	1						
12	F	0	0	3											Included with above
13	U	2	3	9											Included with above
14	D	0	0	1	1800	G	S	0	1						
15	F	0	0	3											Included with above
16	U	2	3	9											Included with above
17	U	2	3	8											Included with above
18	U	1	9	0	50	G	S	0	1						
19	U	2	2	3	50	G	S	0	1						
	U	1	6	2	50	G	S	0	1						
21	U	1	5	4	50	G	S	0	1						
22	U	2	2	0	50	G	S	0	1						
23	U	1	4	7	50	G	S	0	1						
24	U	2	3	9	50	G	S	0	1						
25	F	0	0	3	50	G	S	0	1						
26	F	0	0	5	50	G	S	0	1						

continued from the front.

V. DESCRIPTION OF HAZARDOUS WASTES (continued)

USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

F6: $\frac{A}{55}$ F6: $\frac{A}{56}$

EPA I.D. NO. (enter from page 1)

N J D 0 0 2 1 5 4 0 8 6 3 6

FACILITY DRAWING

Existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)

LONGITUDE (degrees, minutes, & seconds)

4 0 4 2 4 5 0

0 7 4 0 8 2 2 0

VIII. FACILITY OWNER

A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER

2. PHONE NO. (area code & no.)

3. STREET OR P.O. BOX

4. CITY OR TOWN

5. ST.

6. ZIP CODE

OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)

B. SIGNATURE

C. DATE SIGNED

W. George Parker

11/19/80

OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME (print or type)

B. SIGNATURE

C. DATE SIGNED

W. George Parker

11/19/80

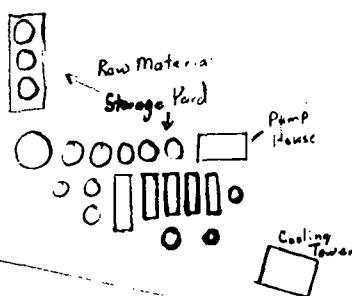
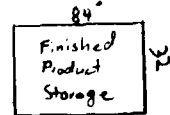
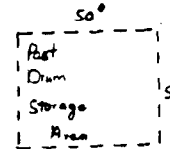
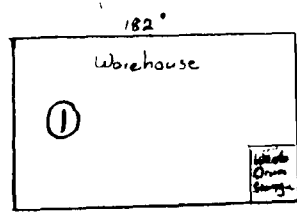
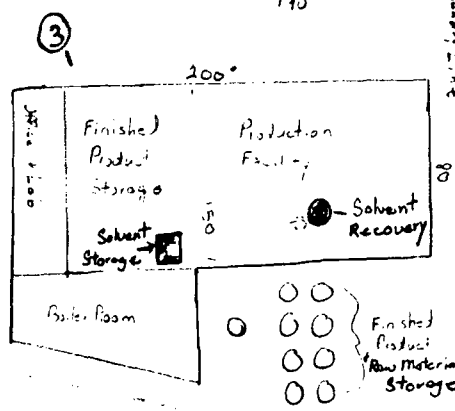
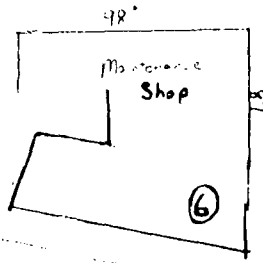
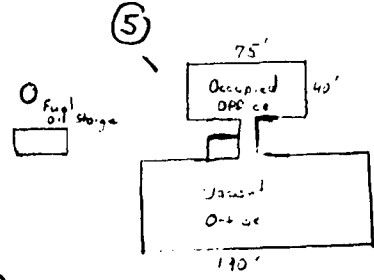
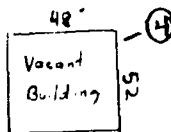
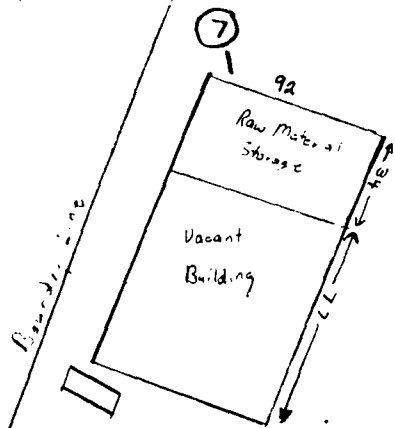
NSD002154086
ADCO CHEMICAL

RUTHERFORD STREET
Boundary Line

Boundary Line

DEANUCY STREET
Boundary Line

Boundary Line



STRAUBING & RUBIN

CONSULTING ENGINEERS

3.0 DESCRIPTION OF OPERATION

3.1 Nature

Adco primarily manufacturers following products

- (i) Alkyd resins
- (ii) Polyurethane resins
- (iii) Acrylic co-polymer emulsions
- (iv) Vinyl Acetate co-polymer resins

3.2 Annual Production Rate

The average annual production of all the products is estimated to be 48 million pounds.

3.3 SIC Code

The operation of Adco Chemical Company falls under SIC code 2821. This SIC Code is used for establishments primarily engaged in manufacturing synthetic resins, plastic materials and nonvulcanizable elastomers.

3.4 Schematic Process Diagram

A schematic of all the points of discharge from Adco Chemical to PVSC is provided on the following sheets. Please refer to sheet 2 of 2 of schematic for information pertaining to process source(s) and estimate of flows from these.

STRAUBING & RUBIN

CONSULTING ENGINEERS

NOTES ON SCHEMATIC SHOWING POINTS OF DISCHARGE TO P.O.T.W.

- Note 1: Troughs collect water from floor washes and rinses of three (3) latex reactors. Minimal amount of water from hand wash and shower in locker rooms also go to the troughs. The water in troughs account for approximately 85% of process water flow to P.V.S.C. (approx. 2670 GPD).
- Note 2: Process water separator tank collects water from four (4) alkyd reactor rinses. After standing overnight in this tank, the solvents separate on the top and are decanted. The water in the tank accounts for approximately 15% of process water discharge to P.V.S.C. (approx. 480 GPD).

TRAUBING & RUBIN
CONSULTING ENGINEERS

6 SOUTH ORANGE AVE.
SOUTH ORANGE N.J. 07079

ADCO CHEMICAL CO.

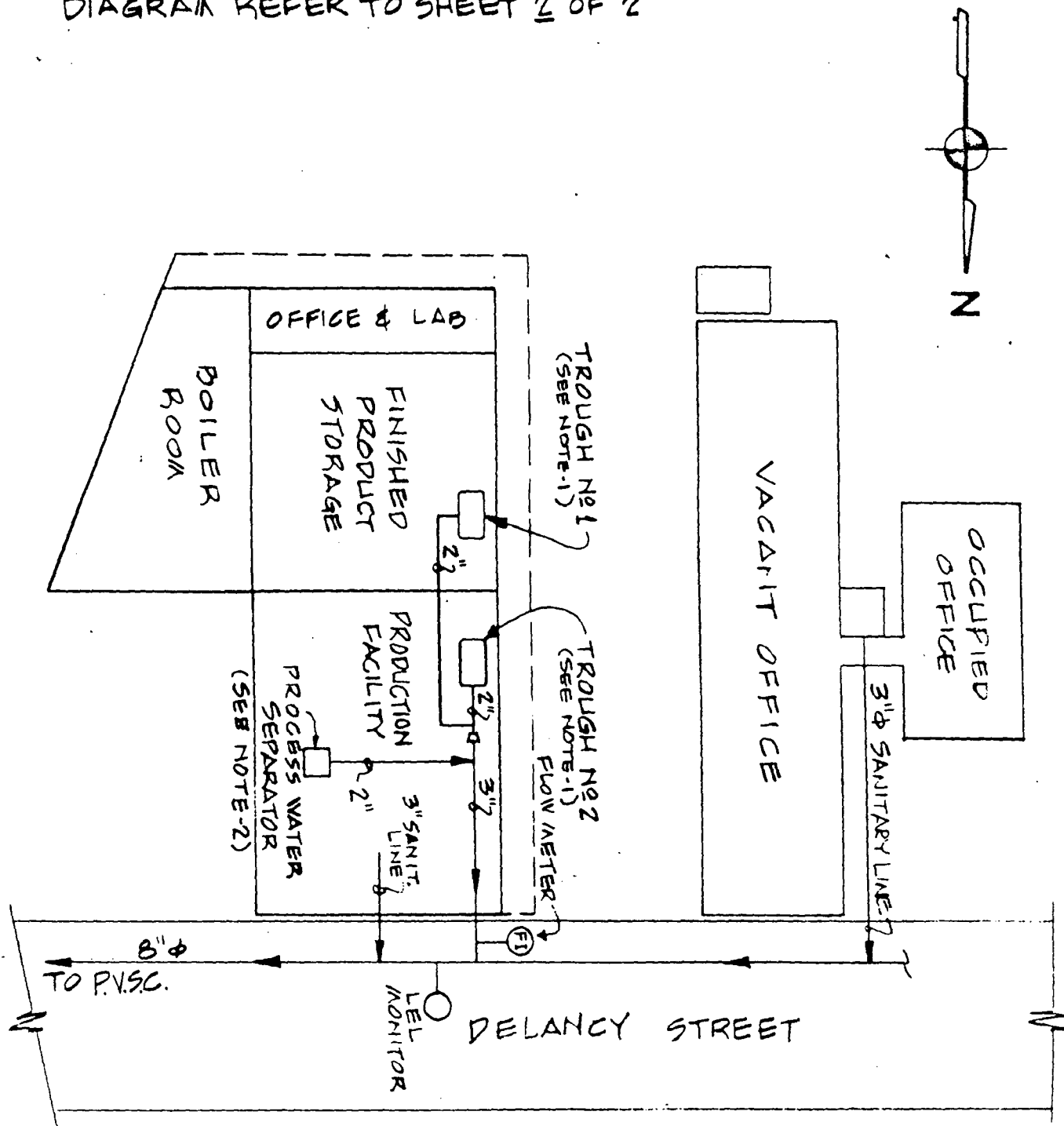
NEWARK

NEW JERSEY

SCHEMATIC
SHOWING
POINTS OF
DISCHARGE TO
P.O.T.W.

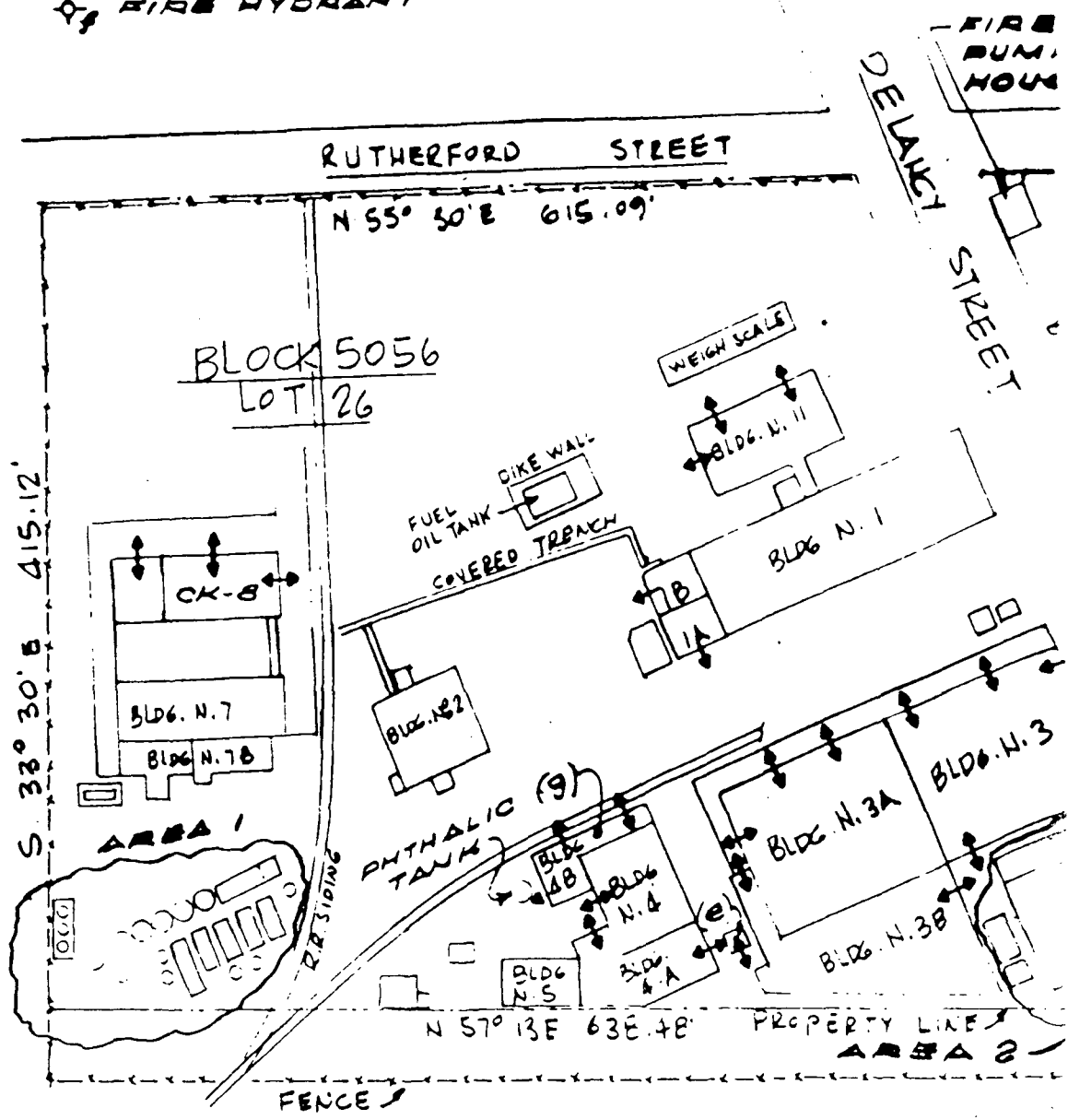
NOTE:

FOR SPECIFIC NOTES RELATIVE TO THIS
DIAGRAM REFER TO SHEET 2 OF 2



- (e) ELECTRIC SHUTOFF
- (9) GAS SHUTOFF
- FIRE HYDRANT


P.V. S.C.

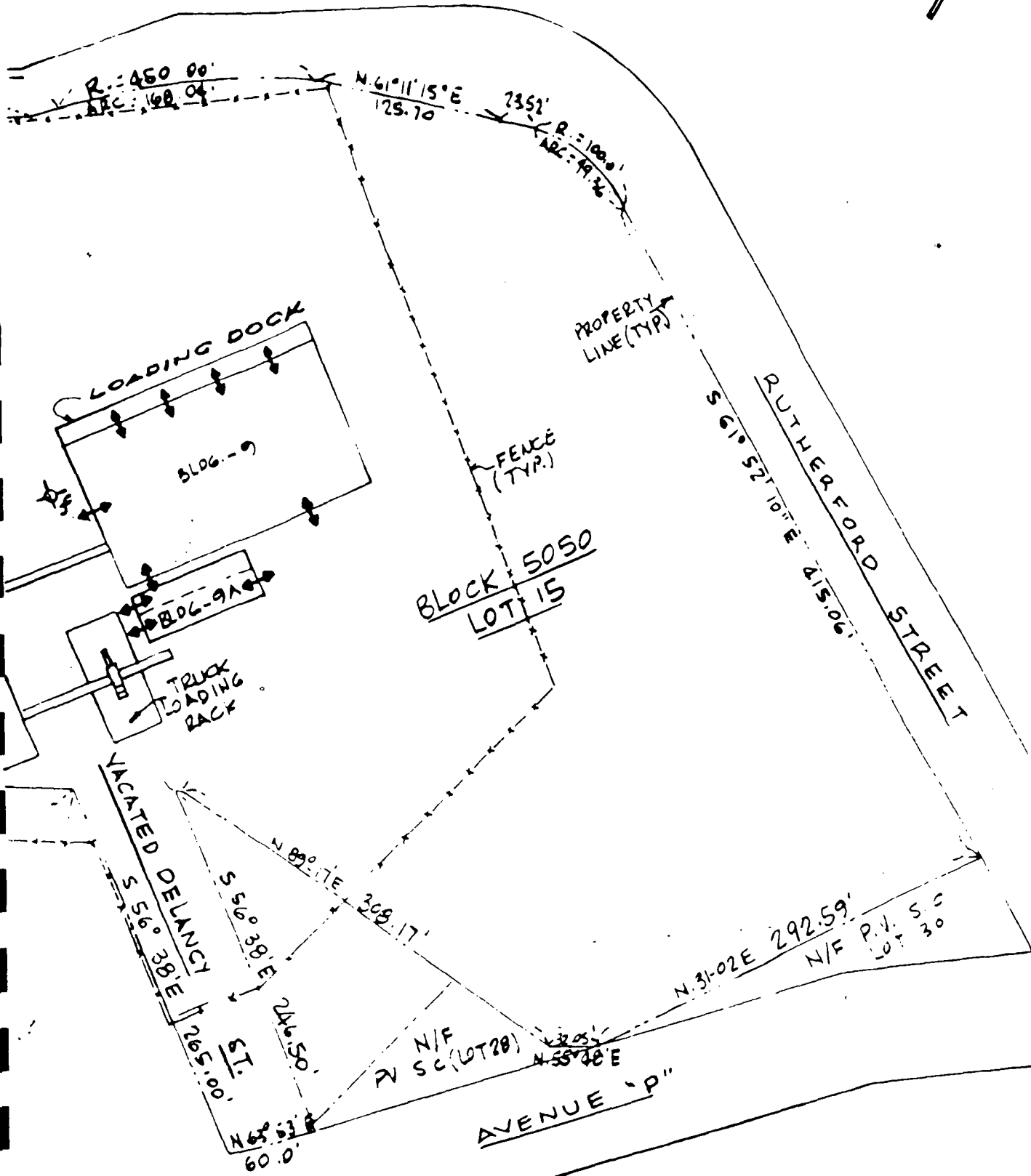


KEY TO BLDGS. & AREAS

AREA	SHEET	DESCRIPTION
CK-B	1A	NONFLAMMABLE RAW MATERIAL STORAGE T.
AREA 1	1A	RAW MATERIAL STORAGE TANKS
BLDG 3	1A	PROCESSING AREA (PROCESS TKS, DRUM STC)
BLDG 3A	1A	LATEX STORAGE TANKS (NONHAZARDOUS)
AREA 2	1A	FIN. PRODUCT STORAGE TANK FARM.
BLDG 9	1B	WAREHOUSE (DRUM & BAG STORAGE RAW MATERIALS & FIN. PRODUCTS)
BLDG 9A	1B	FIN. PRODUCT TANK STORAGE.

SHEET # 1A

<p>ADCO CHEMICAL CO. RUTHERFORD & DELANCY ST. NEWARK, N.J.</p>	<p>SCALE  200 FT</p> <p>_____</p> <p><i>William L. Shaulsky</i> 8/31/88</p>
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SHEET #1B

<p>ADCO CHEMICAL CO. RUTHERFORD & DELANCY ST. NEWARK, N.J.</p>	<p>SCALE 0 50 100 150 200 FT</p> <p>----- <i>Arthur L. Silberman</i> 8/31/88</p>
---	--

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1987
- REPORT FORM -

1. Generator Name: Adco Chemical Company 2. EPA ID No.: NJD002154086
3. Site Address: P. O. Box 128, Newark, NJ 07101
4. Transporter Name: N/A 5. EPA ID No.:
6. TSD Facility Name: N/A 7. EPA ID No.:
8. TSD Address: N/A

	Waste	Waste	DOT Haz	Total	
9. A.)	<u>Number</u>	<u>Description</u>	<u>Class</u>	<u>Quantity</u>	<u>Units</u>

No Hazardous Waste was Generated in the Calendar Year 1987

NOTE: For each combination of transporter and TSD facility, list the total quantity manifested for each waste type.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1987
- WASTE SUMMARY FORM -

Generator Name: Adco Chemical Company

EPA ID No.: NJD002154086

DIRECTIONS:

Please indicate below the total quantity of hazardous waste manifested during the 1987 report year for each unit of measure. Enter the units of measure as they appeared on the manifest(s). Do not convert one form of unit of measure to another.

0 G - Gallons (liquids only)
0 P - Pounds
0 T - Tons (2,000 lbs.)
0 Y - Cubic Yards
0 L - Liters (liquids only)
0 K - Kilograms
0 M - Metric Tons (1,000 kg)
0 N - Cubic Meters

No hazardous was generated
in the Calender Year 1987

*Enter zero (0) for units of measure which were not utilized.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1986
- REPORT FORM -

1. Generator Name: Adco Chemical Company EPA ID No.: NJD002154086
Site Address: P. O. Box 128, Newark, NJ 07101
2. Transporter Name: Prince Trucking Company EPA ID No.: NYD046765574
3. TSD Facility Name: SCA Chemical Services EPA ID No.: ILD000672121
TSD Address: 11700 S. Stony Island, Chicago, Illinois 60017

Waste	Waste	DOT Haz	Total		
A.) <u>Number</u>	B.) <u>Description</u>	C.) <u>Class</u>	D.) <u>Quantity</u>	E.) <u>Units</u>	
D001	Waste Flammable Solid, N.O.S.	Flammable Solid	18	Y	

NOTE: For each combination of transporter and TSD facility, list the total quantity manifested for each waste type.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1986
- REPORT FORM -

1. Generator Name: Adco Chemical Company EPA ID No.: NJD002154086
Site Address: P. O. Box 128, Newark, NJ 07101-0128
2. Transporter Name: Continental Carriers EPA ID No.: NJD99072658
3. TSD Facility Name: Solvent Recovery Service
of New Jersey, Inc. EPA ID No.: NJD002182897
TSD Address: 1200 Sylvan Street, Linden, NJ 07036

Waste A.) <u>Number</u>	Waste B.) <u>Description</u>	DOT Haz C.) <u>Class</u>	Total D.) <u>Quantity</u>	E.) <u>Units</u>
D001	Waste Combustible Liquid, NOS	Combustible Liquid	4460	G
D001	Waste Combustible Liquid, NOS	Combustible Liquid	5171	G

NOTE: For each combination of transporter and TSD facility, list the total quantity manifested for each waste type.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1986
- WASTE SUMMARY FORM -

Generator Name: Adco Chemical Company

EPA ID No.: NJD002154086

Please indicate below the total quantity of hazardous waste manifested during the 1986 report year for each unit of measure:

<u>9631</u>	G - Gallons (liquids only)
<u>0</u>	P - Pounds
<u>0</u>	T - Tons (2,000 lbs.)
<u>18</u>	Y - Cubic Yards
<u>0</u>	L - Liters (liquids only)
<u>0</u>	K - Kilograms
<u>0</u>	M - Metric Tons (1,000 kg)
<u>0</u>	N - Cubic Meters

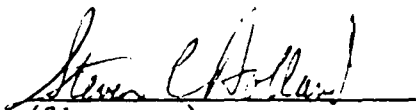
*Enter zero (0) for units of measure which were not utilized.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1985
- CERTIFICATION FORM -

- I. EPA ID Number: NJD002154086
- II. Generator Name: Adco Chemical Company
- III. Contact Person: Mr. Steven C. Holland
- IV. Phone Number: 201-589-0880
- V. Certification:

I certify that the information given in this annual report is true,
accurate and complete.

Steven C. Holland
(Print or type name)


(Signature)

8/31/88
(Date)

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1985
- REPORT FORM -

1. Generator Name: Adco Chemical Company EPA ID No.: NJD002154086
Site Address: P.O. Box 128, Newark, NJ 07101
2. Transporter Name: Prince Trucking EPA ID No.: NYD 046765574
3. TSD Facility Name: SCA Chemical Services EPA ID No.: ILD 000672121
TSD Address: 1700 S. Stoney Island, Chicago, Illinois 60017

A.) <u>Waste</u> <u>Number</u>	B.) <u>Waste</u> <u>Description</u>	C.) <u>DOT Haz</u> <u>Class</u>	D.) <u>Total</u> <u>Quantity</u>	E.) <u>Units</u>
D001	Waste Flammable Solid Filter Cake	Flammable Solid, N.O.S.	18	Y
D001	Waste Flammable Solid Filter Cake	Flammable Solid, N.O.S.	18	Y
D001	Waste Flammable Solid	Flammable Solid, N.O.S.	18	Y
D001	Waste Flammable Solid	Flammable Solid, N.O.S.	18	Y

NOTE: For each combination of transporter and TSD facility, list the total quantity manifested for each waste type.

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
HAZARDOUS WASTE GENERATOR ANNUAL REPORT 1985
- WASTE SUMMARY FORM -

Generator Name: Adco Chemical Company

EPA ID No.: NJD002154086

Please indicate below the total quantity of hazardous waste manifested during the 1985 report year for each unit of measure:

0 G - Gallons (liquids only)

0 P - Pounds

0 T - Tons (2,000 lbs.)

72 Y - Cubic Yards

0 L - Liters (liquids only)

0 K - Kilograms

0 M - Metric Tons (1,000 kg)

0 N - Cubic Meters

*Enter zero (0) for units of measure which were not utilized.

REFERENCE NO. 3



The Complete Handbook of Hazardous Waste Regulation

*A Comprehensive, Step-by-Step Guide to the Regulation
of Hazardous Wastes Under RCRA, TSCA, and Superfund*

Travis Wagner

PERRY-WAGNER PUBLISHING CO., INC.

A Leader in the Environmental Information Field

Brunswick, Maine

Washington, D.C.

Appendix II

EPA-Listed Hazardous Wastes

EPA waste number	Hazardous waste	Hazard code ¹
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Hazardous Waste From Nonspecific Sources

F001 The following spent halogenated solvents used in degreasing: (T)
tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, all spent solvent mixture/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

F002 The following spent halogenated solvents: tetrachloroethylene, (T)
methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, o-dichlorobenzene, and trichlorofluoromethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

* F003 The following spent nonhalogenated solvents: xylene, acetone, (I)
ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, methanol; all spent solvent mixtures/blends containing, before use, one or more of the above nonhalogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

F004 The following spent nonhalogenated solvents: cresols and (T)
cresylic acid, nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by

¹Hazard codes are C = corrosive, H = acutely hazardous, I = ignitable, R = reactive, and T = toxic.

* Listed in Refs. 2 and 3

EPA waste number	Hazardous waste	Hazard code ¹
	volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.	
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above nonhalogenated solvents or those listed in F001, F002, and F004; and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions)	(R,T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations for which cyanides are used in the process (except for precious metals electroplating plating bath sludges)	(R,T)
F009	Spent stripping and cleaning bath solutions from electroplating operations for which cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions)	(R,T)
F010	Quenching bath sludges from oil baths from metal heat treating operations for which cyanides are used in the process (except for precious metals heat-treating quenching bath sludges)	(R,T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning)	(R,T)
F012	Quenching wastewater treatment sludges from metal heat treating operations for which cyanides are used in the process	(T)

* Listed in Refs. 2 and 3

EPA waste number	Hazardous waste	Hazard code ¹
	(except for precious metals heat treating quenching wastewater treatment sludges)	
F024	Wastes including but not limited to distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes (Does not include light ends, spent filters and filter aids, spent dessicants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 261.32)	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives (Does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols (Does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol)	(H)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions	(H)
F027	Discarded unused formulations containing tri-, tetra-, or	(H)

Commercial Chemical Products

The following P code wastes are considered acutely hazardous.

P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001	3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts, when present at concentrations greater than 0.3%
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-aAminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic(III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl
* P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[(1-hydroxy-2-(methyl-amino)ethyl)]-
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis(chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbamimidoselenoic acid
P022	Carbon bisulfide
P022	Carbon disulfide

* listed in Pmts. 2 and 3

PA waste number	Hazardous waste	Hazard code ¹
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used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead

Coking

060	Ammonia still lime sludge from coking operations	(I)
087	Decanter tank tar sludge from coking operations	(I)

P095 Carbonyl chloride
 P033 Chlorine cyanide
 P023 Chloroacetaldehyde
 P024 p-Chloroaniline
 P026 1-(o-Chlorophenyl)thiourea
 P027 3-Chloropropionitrile
 P029 Copper cyanides
 P030 Cyanides (soluble cyanide salts), not elsewhere specified
 P031 Cyanogen
 P033 Cyanogen chloride

 P036 Dichlorophenylarsine
 P037 Dieldrin
 P038 Diethylarsine
 P039 O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
 P041 Diethyl-p-nitrophenyl phosphate
 P040 O,O-Diethyl O-pyrazinyl phosphorothioate
 P043 Diisopropyl fluorophosphate
 P044 Dimethoate
 P045 3,3-Dimethyl-1-(methylthio)-2-butanone,O-[(methylamino)carbonyl] oxime
 P071 O,O-Dimethyl O-p-nitrophenyl phosphorothioate
 P082 Dimethylnitrosamine
 P046 alpha,alpha-Dimethylphenethylamine
 P047 4,6-Dinitro-o-cresol and salts
 P044 4,6-Dinitro-o-cyclohexylphenol
 P043 2,4-Dinitrophenol
 P020 Dantrolene
 P085 Diphosphoramidate, octamethyl
 P039 Disulfoton
 P049 2,4-Dithiobiuret
 P109 Dithiopyrophosphoric acid, tetracetyl ester

 P050 Endosulfan
 P088 Endothall
 P051 Endrin
 P042 Epinephrine
 P046 Ethanamine, 1,1-dimethyl-2-phenyl-
 P084 Ethenamine, N-methyl-N-nitroso-
 P101 Ethyl cyanide
 P054 Ethylenimine

 P097 Famphur
 P056 Fluorine
 P057 Fluoroacetamide
 P058 Fluoroacetic acid, sodium salt
 P065 Fulminic acid, mercury(II) salt

P059 Heptachlor
 P051 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene
 P037 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-dimethanonaphthalene
 P060 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,endo-dimethanonaphthalene
 P004 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,exo-dimethanonaphthalene
 P060 Hexachlorohexahydro-exo,exo-dimethanonaphthalene P062 Hexaethyl tetraphosphate
 P116 Hydrazinecarbothioamide
 P068 Hydrazine, methyl-
 P063 Hydrocyanic acid
 P063 Hydrogen cyanide
 P096 Hydrogen phosphide

 P064 Isocyanic acid, methyl ester
 P007 3(2H)-isoxazolone, 5-(aminomethyl)-

 * P092 Mercury, (acetato-O)phenyl-
 P065 Mercury fulminate (R,T)
 P016 Methane, oxybis(chloro)-
 P112 Methane, tetranitro- (R)
 P118 Methanethiol, trichloro-
 P059 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-

 P066 Methomyl
 P067 2-Methylaziridine
 P068 Methyl hydrazine
 P064 Methyl isocyanate
 P069 2-Methylactonitrile
 P071 Methyl parathion

 P072 alpha-Naphthylthiourea
 P073 Nickel carbonyl
 P074 Nickel cyanide
 P074 Nickel(II) cyanide
 P073 Nickel tetracarbonyl
 P075 Nicotine and salts
 P076 Nitric oxide
 P077 p-Nitroaniline
 P078 Nitrogen dioxide
 P076 Nitrogen(II) oxide
 P078 Nitrogen(IV) oxide
 P081 Nitroglycerine (R)
 P082 N-Nitrosodimethylamine

* listed in Refs. 2 and 3

- U143 Lasiocarpine
- U144 Lead acetate
- U145 Lead phosphate
- U146 Lead subacetate
- U129 Lindane
- U147 Maleic anhydride
- U148 Maleic hydrazide
- U149 Malononitrile
- U150 Melphalan
- U151 Mercury
- U152 Methacrylonitrile (I,T)
- U092 Methanamine, N-methyl- (I)
- U029 Methane, bromo-
- U045 Methane, chloro- (I,T)
- U046 Methane, chloromethoxy-
- U068 Methane, dibromo-
- U080 Methane, dichloro-
- U075 Methane, dichlorodifluoro-
- U138 Methane, iodo-
- U119 Methanesulfonic acid, ethyl ester
- U211 Methane, tetrachloro-
- U121 Methane, trichlorofluoro-
- U153 Methanethiol (I,T)
- U225 Methane, tribromo-
- U044 Methane, trichloro-
- U121 Methane, trichlorofluoro-
- U123 Methanoic acid (C,T)
- U036 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
- U154 Methanol (I)
- U155 Methapyrilene
- U247 Methoxychlor
- U154 Methyl alcohol (I)
- U029 Methyl bromide
- U186 1-Methylbutadiene (I)
- U045 Methyl chloride (I,T)
- U156 Methyl chlorocarbonate (I,T)
- U226 Methyl chloroform
- U157 3-Methylcholanthrene
- U158 4,4'-Methylenebis(2-chloroaniline)
- U132 2,2'-Methylenebis(3,4,6-trichlorophenol)
- U068 Methylene bromide
- U080 Methylene chloride
- U122 Methylene oxide
- U159 Methyl ethyl ketone (I,T)
- U160 Methyl ethyl ketone peroxide (R,T)
- U138 Methyl iodide

* Listed in Refs. 2 and 3.

- U161 Methyl isobutyl ketone (I)
- * U162 Methyl methacrylate (I,T)
- U163 N-Methyl-N'-nitro-N-nitrosoguanidine
- U161 4-Methyl-2-pentanone (I)
- U164 Methylthiouracil
- U010 Mitomycin C
- U059 5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
- U165 Naphthalene
- U047 Naphthalene, 2-chloro-
- U166 1,4-Naphthalenedione
- U236 2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-bi-phenyl)-4,4'-diyl)]-bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt
- U166 1,4-Naphthaquinone
- U167 1-Naphthylamine
- U168 2-Naphthylamine
- U167 alpha-Naphthylamine
- U168 beta-Naphthylamine
- U026 2-Naphthylamine, N,N'-bis(2-chloromethyl)-
- U169 Nitrobenzene (I,T)
- U170 p-Nitrophenol
- U171 2-Nitropropane (I)
- U172 N-Nitrosodi-n-butylamine
- U173 N-Nitrosodiethanolamine
- U174 N-Nitrosodiethylamine
- U111 N-Nitroso-N-propylamine
- U176 N-Nitroso-N-ethylurea
- U177 N-Nitroso-N-methylurea
- U178 N-Nitroso-N-methylurethane
- U179 N-Nitrosopiperidine
- U180 N-Nitrosopyrrolidine
- U181 5-Nitro-o-toluidine
- U193 1,2-Oxathiolane, 2,2-dioxide
- U058 2H-1,3,2-Oxazaphosphorine, 2-[bis(2-chloroethyl)amino] tetrahydro-, oxide 2-
- U115 Oxirane (I,T)
- U041 Oxirane, 2-(chloromethyl)-
- U182 Paraldehyde
- U183 Pentachlorobenzene
- U184 Pentachloroethane
- U185 Pentachloronitrobenzene
- U186 1,3-Pentadiene (I)
- U187 Phenacetin

U031 1-Butanol (I)
 U159 2-Butanone (I,T)
 U160 2-Butanone peroxide (R,T)
 U053 2-Butenal
 U074 2-Butene, 1,4-dichloro- (I,T)
 U031 n-Butyl alcohol (I)
 U136 Cacodylic acid
 U032 Calcium chromate
 U238 Carbamic acid, ethyl ester
 U178 Carbamic acid, methylnitroso-, ethyl ester
 U176 Carbamide, N-ethyl-N-nitroso-
 U177 Carbamide, N-methyl-N-nitroso-
 U219 Carbamide, thio-
 U097 Carbamoyl chloride, dimethyl-
 U215 Carbonic acid, dithallium (I)salt
 U156 Carbonochloridic acid, methyl ester (I,T)
 U033 Carbon oxyfluoride (R,T)
 U211 Carbon tetrachloride
 U033 Carbonyl fluoride (R,T)
 U034 Chloral
 U035 Chlorambucil
 U036 Chlordane, technical
 U026 Chlornaphazine
 U037 Chlorobenzene
 U039 4-Chloro-m-cresol
 U041 1-Chloro-2,3-epoxypropane
 U042 2-Chloroethyl vinyl ether
 U044 Chloroform
 U046 Chloromethyl methyl ether
 U047 beta-Chloronaphthalene
 U048 o-Chlorophenol
 U049 4-Chloro-o-toluidine, hydrochloride
 U032 Chromic acid, calcium salt
 U050 Chrysene
 U051 Creosote
 U052 Cresols
 U052 Cresylic acid
 U053 Crotonaldehyde
 U055 Cumene (I)
 U246 Cyanogen bromide
 U197 1,4-Cyclohexadienedione
 U056 Cyclohexane (I)
 U057 Cyclohexanone (I)
 U130 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexa-chloro- U058 Cyclophosphamide
 U240 2,4-D, salts and esters

U059 Daunomycin
 U060 DDD
 U061 DDT
 U142 Decachloro octahydro-1,3,4-metheno-2H-cyclobuta(c,d) pentalen-2-one
 U062 Diallyl
 U133 Diamine (R,T)
 U221 Diaminotoluene
 U063 Dibenz(a,h)anthracene
 U063 1,2:5,6-Dibenzanthracene
 U064 1,2:7,8-Dibenzopyrene
 U064 Dibenz(a,i)pyrene
 U066 1,2-Dibromo-3-chloropropane
 U069 Dibutyl phthalate
 U062 S-(2,3-Dichloroallyl)diisopropylthiocarbamate
 U070 o-Dichlorobenzene
 U071 m-Dichlorobenzene
 U072 p-Dichlorobenzene
 U073 3,3'-Dichlorobenzidine
 U074 1,4-Dichloro-2-butene (I,T)
 U075 Dichlorodifluoromethane
 U192 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide
 U060 Dichloro diphenyl dichloroethane
 U061 Dichloro diphenyl trichloroethane
 U078 1,1-Dichloroethylene
 U079 1,2-Dichloroethylene
 U025 Dichloroethyl ether
 U081 2,4-Dichlorophenol
 U082 2,6-Dichlorophenol
 U240 2,4-Dichlorophenoxyacetic acid, salts and esters
 U083 1,2-Dichloropropane
 U084 1,3-Dichloropropene
 U085 1,2:3,4-Diepoxybutane (I,T)
 U108 1,4-Diethylene dioxide
 U086 N,N-Diethylhydrazine
 U087 O,O-Diethyl-S-methyl-dithiophosphate
 U088 Diethyl phthalate
 U089 Diethylstilbestrol
 U148 1,2-Dihydro-3,6-pyridazinedione
 U090 Dihydrosafrole
 U091 3,3'-Dimethoxybenzidine
 U092 Dimethylamine (I)
 U093 Dimethylaminoazobenzene
 U094 7,12-Dimethylbenz(a)anthracene
 U095 3,3'-Dimethylbenzidine
 U096 alpha,alpha-Dimethylbenzylhydroperoxide (R)
 U097 Dimethylcarbamoyl chloride
 U098 1,1-Dimethylhydrazine

* Listed in Refs. 2 and 3.

U099 1,2-Dimethylhydrazine
 U101 2,4-Dimethylphenol
 U102 Dimethyl phthalate
 U103 Dimethyl sulfate
 U105 2,4-Dinitrotoluene
 U106 2,6-Dinitrotoluene
 U107 Di-n-octyl phthalate
 U108 1,4-Dioxane
 U109 1,2-Dipheylhydrazine
 U110 Dipropylamine (I)
 U111 Di-N-propylnitrosamine

 U001 Ethanal (I)
 U174 Ethanamine, N-ethyl-N-nitroso-
 U067 Ethane, 1,2-dibromo-
 U076 Ethane, 1,1-dichloro-
 U077 Ethane, 1,2-dichloro-
 U114 1,2-Ethanedithiylbiscarbamodithioic acid
 U131 Ethane, 1,1,1,2,2,2-hexachloro-
 U024 Ethane, 1,1'-(methylenebis(oxy))bis(2-chloro)-
 U003 Ethanenitrile (I,T)
 U117 Ethane, 1,1'-oxybis- (I)
 U025 Ethane, 1,1'-oxybis(2-chloro)-
 U184 Ethane pentachloro-
 U208 Ethane, 1,1,1,2-tetrachloro-
 U209 Ethane, 1,1,2,2-tetrachloro-
 U218 Ethanethioamide
 U247 Ethane, 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)
 U227 Ethane, 1,2,1-trichloro-
 U043 Ethene, chloro-
 U042 Ethene, 2-chloroethoxy-
 U078 Ethene, 1,1-dichloro-
 U079 Ethene, trans-1,2-dichloro-
 U210 Ethene, 1,1,2,2-tetrachloro-
 U173 Ethanol, 2,2'-(nitrosoimino)bis-
 U004 Ethanone, 1-phenyl-
 U006 Ethanoyl chloride (C,R,T)
 U112 Ethyl acetate (I)
 U113 Ethyl acrylate (I)
 U238 Ethyl carbamate (urethan)
 U038 Ethyl 4,4'-dichlorobenzilate
 U359 Ethylene glycol monoethyl ether
 U114 Ethylenebis(dithiocarbamic acid)
 U067 Ethylene dibromide
 U077 Ethylene dichloride
 U115 Ethylene oxide (I,T)
 U116 Ethylene thiourea

U117 Ethyl ether
 U076 Ethylidene dichloride
 U118 Ethylmethacrylate
 U119 Ethyl methanesulfonate

 U139 Ferric dextran
 U120 Fluoranthene
 U122 Formaldehyde
 U123 Formic acid (C,T)
 U124 Furan (I)
 U125 2-Furancarboxaldehyde
 * U147 2,5-Furandione
 U213 Furan, tetrahydro- (I)
 U125 Furfural (I)
 U124 Furfuran (I)

 U206 D-Glucopyranose, 2-(reido)-
 U126 Glycidylaldehyde
 U163 Guanidine, N-nitros

 U127 Hexachlorobenzene
 U128 Hexachlorobutadiene
 U129 Hexachlorocyclohexane(gamma isomer)
 U130 Hexachlorocyclopentadiene
 U131 Hexachloroethane
 U132 Hexachlorophene
 U243 Hexachloropropene
 U133 Hydrazine (R,T)
 U086 Hydrazine, 1,2-diethyl-
 U098 Hydrazine, 1,1-dimethyl-
 U099 Hydrazine, 1,2-dimethyl-
 U109 Hydrazine, 1,2-diphenyl-
 U134 Hydrofluoric acid (C,T)
 U134 Hydrogen fluoride (C,T)
 U135 Hydrogen sulfide
 U096 Hydroperoxide, 1-methyl-1-phenylethyl- (R)
 U136 Hydroxydimethylarsine oxide

 U116 2-Imidazolidinethione
 U137 Indeno(1,2,3-cd)pyrene
 U139 Iron dextran
 U140 Isobutyl alcohol (I,T)
 U141 Isosafrole

 U142 Kepone

* Listed in Refs. 2 and 3

U188 Phenol
 U048 Phenol, 2-chloro-
 U039 Phenol, 4-chloro-3-methyl-
 U081 Phenol, 2,4-dichloro-
 U082 Phenol, 2,6-dichloro-
 U101 Phenol, 2,4-dimethyl-
 U170 Phenol, 4-nitro-
 U137 1,10-(1,2-phenylene)pyrene
 U145 Phosphoric acid, Lead salt
 U087 Phosphorodithioic acid O,O-diethyl-,S-methylester
 U189 Phosphorous sulfide (R)
 U190 Phthalic anhydride
 U191 2-Picoline
 U192 Pronamide
 U194 1-Propanamine (I,T)
 U110 1-Propanamine, N-propyl- (I)
 U066 Propane, 1,2-dibromo-3-chloro-
 U149 Propanedinitrile
 U171 Propane, 2-nitro- (I)
 U027 Propane, 2,2'-oxybis(2-chloro)-
 U193 1,3-Propane sultone
 U235 1-Propanol, 2,3-dibromo-,phosphate(3:1)
 U126 1-Propanol, 2,3-epoxy-
 U140 1-Propanol, 2-methyl- (I,T)
 U002 2-Propanone (I)
 U007 2-Propenamide
 U084 Propene, 1,3-dichloro-
 U243 1-Propene, 1,1,2,3,3,3-hexachloro-
 U009 2-Propenenitrile
 U152 2-Propenenitrile, 2-methyl- (I,T)
 U008 2-Propenoic acid (I)
 U113 2-Propenoic acid, ethyl ester (I)
 U118 2-Propenoic acid, 2-methyl-, ethyl ester
 U162 2-Propenoic acid, 2-methyl, methyl ester (I,T)
 U194 n-Propylamine (I,T)
 U083 Propylene dichloride
 U196 Pyridine
 U155 Pyridine, 2-[(2-(dimethylamino)-2-thenylamino)]
 U179 Pyridine, hexahydro-N-nitroso-
 U191 Pyridine, 2-methyl-
 U164 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
 U180 Pyrrole, tetrahydro-N-nitroso-
 U200 Reserpine
 U201 Resorcinol
 U202 Saccharin and salts

* Listed in Refs. 2 and 3

U203 Safrole
 U204 Selenious acid
 U204 Selenium dioxide
 U205 Selenium disulfide (R,T)
 U015 L-Serine, diazoacetate (ester)
 U089 4,4'-Stilbenediol, alpha, alpha'-diethyl-
 U206 Streptozotocin
 U135 Sulfur hydride
 U103 Sulfuric acid, dimethyl ester
 U189 Sulfur phosphide (R)
 U205 Sulfur selenide (R,T)
 U207 1,2,4,5-Tetrachlorobenzene
 U208 1,1,1,2-Tetrachloroethane
 U209 1,1,2,2-Tetrachloroethane
 U210 Tetrachloroethylene
 U213 Tetrahydrofuran (I)
 U214 Thallium(I) acetate
 U215 Thallium(I) carbonate
 U216 Thallium(I) chloride
 U217 Thallium(I) nitrate
 U218 Thioacetamide
 U153 Thiomethanol (I,T)
 U219 Thiourea
 U244 Thiram
 * U220 Toluene
 U221 Toluenediamine
 * U223 Toluenediisocyanate (R,T)
 U328 o-Toluidine
 U222 o-Toluidine hydrochloride
 U353 p-Toluidine
 U011 1H-1,2,4-Triazol-3-amine
 U226 1,1,1-Trichloroethane
 U227 1,1,2-Trichloroethane
 U228 Trichloroethene
 U228 Trichloroethylene
 U121 Trichloromonofluoromethane
 U234 sym-Trinitrobenzene (R,T)
 U182 1,3,5-Trioxane, 2,4,5-trimethyl-
 U235 Tris(2,3-dibromopropyl)phosphate
 U236 Trypan blue
 U237 Uracil, 5[bis(2-chloromethyl)amino]-
 U237 Uracil mustard
 U043 Vinyl chloride

U248 Warfarin, when present at concentrations of 0.3% or less

* U239 Xylene (l)

U200 Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5 trimethoxybenzoyl)oxy]-methyl ester

U249 Zinc phosphide, when present at concentrations of 10% or less

* Listed in Refs 2 and 3

REFERENCE NO. 4



ACKNOWLEDGEMENT OF NOTIFICATION
OF HAZARDOUS WASTE ACTIVITY
(VERIFICATION)

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER

NJ0002154086

AFCC CHEMICAL CO.
P.O. BOX 128
NEWARK

NJ 07101

INSTALLATION ADDRESS

49 RUTHERFORD ST.
NEWARK

NJ 07105

REFERENCE NO. 5

357

RCRA GENERATOR INSPECTION FORM

COMPANY NAME:

Rockwell Co.

EPA I.D. NUMBER:

050002154086

COMPANY ADDRESS:

49 North 1st St Newark N.J.

COMPANY CONTACT OR OFFICIAL:

Robert H. Hurre
Steve Holland

INSPECTOR'S NAME:

Charles Elmerick

TITLE:

Chief Manager
David M. Hurre

BRANCH/ORGANIZATION:

03 W.F.
Bureau of the State

CHECK IF FACILITY IS ALSO A TSD

FACILITY ☒

DATE OF INSPECTION:

5-13-81

YES NO DON'T
KNOW

(1) Is there reason to believe that the facility has hazardous waste on site? ☒

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

☒ Company admits that its waste is hazardous during the inspection.

☒ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

☐ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (\$261.31)

☐ The waste material is listed in the regulations as a hazardous waste from a specific source (\$261.32)

☐ The material or product is listed in the regulations as a discarded commercial chemical product (\$261.33)

☐ EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

☐ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

YES NO DON'T
KNOW

- b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials? 1 X —

Please explain:

All waste kept in our warehouse?

- c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.

- d. Describe the activities that result in the generation of hazardous waste.

- (2) Is hazardous waste stored on site? 1 — —

- a. What is the longest period that it has been accumulated? 1 year

- b. Is the date when drums were placed in storage marked on each drum? — X —

- (3) Has hazardous waste been shipped from this facility since November 19, 1980? — X —

- a. If "yes," approximately how many shipments were made?

- (4) Approximately how many hazardous waste shipments off site have been made since November 19, 1980? none

- a. Does it appear from the available information that there is a manifest copy available for each hazardous waste shipment that has been made? — Y/N —

- b. If "no" or "don't know," please elaborate.

*manifests have not been used
by them.*

YES	NO	DON'T KNOW
-----	----	---------------

c. Does each manifest (or a representative sample) have the following information?

- a manifest document number
- the generator's name, mailing address, telephone number, and EPA identification number
- the name, and EPA identification number of each transporter
- the name, address and EPA identification number of the designated facility and an alternate facility, if any:
- a description of the wastes (DOT)
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA

—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

(5) Were there any hazardous wastes stored on site at the time of the inspection?

—	—	—
---	---	---

a. If "yes," do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure?

—	—	—
---	---	---

b. If not properly packaged or in secure tanks, please explain.

c. Are containers clearly marked and labelled?

—	—	—
---	---	---

d. Do any containers appear to be leaking?

—	—	—
---	---	---

e. If "yes," approximately how many?

—	—	—
---	---	---

4

*(6) Has the generator submitted an annual report to EPA covering the previous calendar year?

a. How do you know?

(7) Has the generator received signed copies (from the TSD facility) of all manifests for wastes shipped off site more than 35 days ago?

a. If "no," have Exception Reports been submitted to EPA covering these shipments?

(8) General comments.

* The effective date for this requirement is March 1, 1982.

**RCRA TREATMENT, STORAGE AND DISPOSAL FACILITY INSPECTION FORM
FOR TSD FACILITIES ONLY**

COMPANY NAME: Glaxo EPA I.D. Number: MTW002154086

COMPANY ADDRESS: 49 R. Mumford St. Newark NJ

COMPANY CONTACT OR OFFICIAL: Steve Holland OTHER ENVIRONMENTAL PERMITS HELD

Robt. Henvie BY FACILITY: ☐ NPDES

☒ AIR

☐ OTHER

INSPECTOR'S NAME: Charles Elmendorf

DATE OF INSPECTION: 5-19-81

BRANCH/ORGANIZATION: NIHDC/Environmental Health

TIME OF DAY INSPECTION TOOK PLACE: 11:00

(1) Is there reason to believe that the facility has hazardous waste on site? Yes

a. If yes, what leads you to believe it is hazardous waste? Check appropriate box:

☒ Company admits that its waste is hazardous during the inspection.

☒ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

☒ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (\$261.31)

☐ The waste material is listed in the regulations as a hazardous waste from a specific source (\$261.32)

☐ The material or product is listed in the regulations as a discarded commercial chemical product (\$261.33)

☐ EPA testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

☐ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

b. Is there reason to believe that there are hazardous wastes on-site which the company claims are merely products or raw materials?

YES NO DON'T KNOW

Please explain: All wastes stored in one warehouse

c. Identify the hazardous wastes that are on-site, and estimate approximate quantities of each.

(2) Does the facility generate hazardous waste? X

(3) Does the facility transport hazardous waste? X

(4) Does the facility treat, store or dispose of hazardous waste? X

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NEW YORK, N.Y. 10007

VISUAL OBSERVATIONS

(5) SITE SECURITY (\$265.14)YES NO DON'T
KNOW

- a. Is there a 24-hour surveillance system? ☐ ☒ ☐
- b. Is there a suitable barrier which completely surrounds the active portion of the facility? ☒ ☐ ☐
- c. Are there "Danger-Unauthorized Personnel Keep Out" signs posted at each entrance to the facility? ☒ ☐ ☐

(6) Are there ignitable, reactive or incompatible wastes on site? (\$265.27)

- a. If "YES", what are the approximate quantities? ☒ ☐ ☐ *Approx 7.5 in 25 gal drums.*
- b. If "YES", have precautions been taken to prevent accidental ignition or reaction of ignitable or reactive waste? ☒ ☐ ☐
- c. If "YES", explain *drums stored in warehouse under a sprinkler system*
- d. In your opinion, are proper precautions taken so that these wastes do not:
- generate extreme heat or pressure, fire or explosion, or violent reaction? ☒ ☐ ☐
 - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health? ☒ ☐ ☐
 - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions? ☒ ☐ ☐
 - damage the structural integrity of the device or facility containing the waste? ☒ ☐ ☐
 - threaten human health or the environment? ☒ ☐ ☐

Please explain your answers, and comment if necessary.

- e. Are there any additional precautions which you would recommend to improve hazardous waste handling procedures at the facility? *No, wastes are in one warehouse,*

(7) Does the facility comply with preparedness and prevention requirements including maintaining: (\$265.32)

properly packaged and stored under a sprinkler system

	YES	NO	DON'T KNOW
- an internal communications or alarm system?	X		
- a telephone or other device to summon emergency assistance from local authorities?	X		
- portable fire equipment?	X		
- adequate aisle space?		X	
- in your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.	X		

In your opinion, do the types of wastes on site require all of the above procedures, or are some not needed? Explain.

*(8) Have you inspected to verify that the groundwater monitoring wells (if any) mentioned in the facility's groundwater monitoring plan (see no. 19 below) are properly installed?

If you have, please comment, as appropriate.

(9) a. Is there any reason to believe that groundwater contamination already exists from this facility? If "YES", explain.

b. Do you believe that operation of this facility may affect groundwater quality?

c. If "YES", explain.

RECORDS INSPECTION

(10) Has the facility received hazardous waste from an off-site source since Nov. 19, 1980 (effective date of the regulations)?

a. If "YES", does it appear that the facility has a copy of a manifest for each hazardous waste load received?

b. How many post-November 19 manifests does it have? (If the number is large, you may estimate)

c. Does each manifest (or a representative sample) have the following information?

- a manifest document number

* This requirement applies only after November 19, 1981.

	YES	NO	ROW
- the generator's name, mailing address, telephone number, and EPA identification number			
- the name, and EPA identification number of each transporter		N/A	
- the name, address and EPA identification number of the designated facility and an alternate facility, if any;			
- a DOT description of the wastes			
- the total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle			
- a certification that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation under regulations of the Department of Transportation and the EPA			

d. Are there any indications that unmanifested hazardous wastes have been received since November 19, 1980? If YES, explain.

(11) Does the facility have a written waste analysis plan specifying test methods, sampling methods, and sampling frequency?

a. Does the character of wastes handled at the facility change from day to day, week to week, etc., thus requiring frequent testing? (You may check more than one)

Waste character is the same

All wastes are basically the same

Company treats all waste as hazardous

Don't know

b. Does hazardous waste come to this facility from off-site sources?

c. If waste comes from an off-site source, are there procedures in the plan to insure that wastes received conform to the accompanying manifest?

(12) INSPECTIONS (\$265.15)

a. Does the facility have a written inspection schedule?

b. Does the schedule identify the types of problems to be looked for and the frequency for inspections?

c. Does the owner/operator record inspections in a log?

d. Is there evidence that problems reported in the inspection log have not been remedied? If "YES," please explain.

No log kept.

(13) PERSONNEL TRAINING (\$265.16)

a. Is there written documentation of the following:

- job title for each position at the facility related to hazardous waste management and the name of the employee filling each job? ☒ X
- type and amount of training to be given to personnel in jobs related to hazardous waste management? ☒ X
- actual training or experience received by personnel? ☒ X

(14) Does the facility have a written contingency plan for emergency procedures designed to deal with fires, explosion or any unplanned release of hazardous waste? ☒ X

(\$265.51)

a. Does the plan describe arrangements made with local authorities? ☒ Xb. Has the contingency plan been submitted to local authorities? ☒ X

How do you know?

c. Does the plan list names, address, phone numbers of emergency contacts?

d. Does the plan have a list of what emergency equipment is available?

e. Is there a provision for evacuating facility personnel?

f. Was an Emergency Coordinator present or on call at the time of the inspection?

(15) Does the owner/operator keep a written operating record with: (\$265.73)

- a description of wastes received with methods and dates of treatment, storage or disposal? ☒ N/A no waste received from off-site
- location and quantity of each waste? ☒ X
- detailed records and results of waste analysis and treatability tests performed on wastes coming into the facility? ☒ N/A
- detailed operating summary reports and description of all emergency incidents that required the implementation of the facility contingency plan? ☒ N/A plan never had to be implemented

* (16) Does the facility have written closure and post-closure plans? (\$265.110) ☒ N/A

a. Does the written closure plan include:

- a description of how and when the facility will be partially (if applicable) and ultimately closed?

- an estimate of the maximum inventory of wastes in storage or treatment at any time during the life of the facility? _ _ _
- a description of the steps necessary to decontaminate facility equipment during closure? _ _ _
- a schedule for final closure including the anticipated date when wastes will no longer be received and when final closure will be completed? _ _ _
- b. What is the anticipated date for final closure? _ _ _
- 1c. Does the owner/operator have a written post-closure plan identifying the activities which will be carried on after closure and the frequency of these activities? _ _ _
- d. Does the written post-closure plan include:
 - a description of planned groundwater monitoring activities and their frequencies during post-closure? _ _ _
 - a description of planned maintenance activities and frequencies to ensure integrity of final cover during post-closure? _ _ _
 - the name, address and phone number of a person or office to contact during post-closure? _ _ _
- *(17) Does the owner/operator have a written estimate of the cost of closing the facility? (S265.90) What is it? _ _ _
- *(18) Does the owner/operator have a written estimate of the cost for post-closure monitoring and maintenance? (S265.90) What is it? (S265.90) _ _ _
- *(19) Has a groundwater monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill or land treatment process? (This requirement does not apply to recycling facilities.) (S265.90)
 - a. Does the plan indicate that at least one monitoring well has been installed hydraulically upgradient from the limit of the waste management area? _ _ _
 - b. Does the plan indicate that there are at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area? _ _ _

† This section applies only to disposal facilities.

* Effective date for this requirement is May 19, 1981.

SITE-SPECIFIC

Please circle all appropriate activities and answer questions on indicated pages for all activities circled. When you submit your report, include only those site-specific pages that you have used.

STORAGETREATMENTDISPOSAL

Waste Pile p. 9

Tank p. 8

Landfill pp. 10-11

Surface Impoundment p. 8

Surface Impoundment pp. 8-9

Land Treatment
pp. 9, 10

Container p. 7

Incineration pp. 12-13

Surface Impoundment p. 8

Tank, above ground p. 8

Thermal Treatment pp. 12-13

Other _____

Tank, below ground p. 8

Land Treatment pp. 9-10

Other _____

Chemical, Physical p. 13
and Biological
Treatment (other than
in tanks, surface impoundment
or land treatment
facilities)YES NO DON'T
KNOW

Other _____

CONTAINERS (265-170)

Are there any leaking containers?

2. Are there any containers which appear in danger of leaking?

If "YES", explain.

3. Do wastes appear compatible with container materials?

4. Are all containers closed except those in use?

5. Do containers appear to be opened, handled or stored in a manner which may rupture the containers or cause them to leak?

6. How often does the plant manager claim to inspect container storage areas?

7. Does it appear that incompatible wastes are being stored in close proximity to one another?
If "YES", explain.

8. Are containers holding ignitable or reactive wastes located at least 15 meters (50 feet) from the facility's property line?

9. What is the approximate number and size of containers with hazardous wastes?

Approx. 75 ea 35 gal drums.

TANKS (\$265.190)YES NO DON'T
KNOW

1. Are there any leaking tanks?
If "YES", explain. _____
2. Are there any tanks which appear in danger of
leaking.
If "YES", explain. _____
3. Are wastes or treatment reagents being
placed in tanks which could cause them to
rupture, leak, corrode or otherwise fail?
If "YES", explain. _____
4. Do uncovered tanks have at least 2 feet
of freeboard or an adequate containment
structure? _____
5. Where hazardous waste is continuously
fed into a tank, is the tank equipped with
a means to stop this inflow? _____
6. Does it appear that incompatible wastes
are being stored in close proximity to one
another, or in the same tank?
If "YES", explain. _____
7. How often does the plant
inspect container storage? _____
8. Are ignitable or reactive wastes stored
in a manner which presents a hazard
of ignition or reaction?
If "YES", explain. _____
9. What is the approximate number and size of
tanks containing hazardous wastes? _____

SURFACE IMPOUNDMENTS (\$265.220)

1. Is there at least 2 feet of freeboard
in the impoundment? _____
2. Do all earthen dikes have a protective
cover to preserve their structural integrity?
If "YES", specify type of covering. _____
3. Is there reason to believe that incompatible
wastes are being placed in the same surface
impoundment?
If "YES", explain. _____

4. Are ignitable or reactive wastes being placed in surface impoundments without being treated to remove these characteristics?
If "YES", explain.
5. Are there any leaks, failures or is there any deterioration in the impoundments?
If "YES", explain.
6. Give the approximate size of surface impoundments (gallons or cubic feet).

WASTE PILES (\$265.250)

1. Is the waste pile protected from wind erosion?
- a. Does it appear to need such protection?
- b. Explain what type of protection exists.

2. Does it appear that incompatible wastes are being stored in the same waste pile?
- If "YES", explain.

Is leachate from this pile a hazardous waste?

If "YES", explain this determination and answer (a) and (b) below.

a. Is the pile placed on an impermeable base that is compatible with the waste?

b. Is the pile protected from precipitation?

4. In your judgment, are ignitable or reactive wastes managed in such a way that they are protected from any material or conditions which may cause them to ignite?
Please explain or indicate if no such wastes are present.

Are they placed on an existing pile so that they no longer meet the definition of ignitable or reactive waste?
Please explain.

5. How many waste piles are on site, and approximately how large are they?

LAND TREATMENT (\$265.270)

1. Can the facility operator demonstrate that the hazardous waste has been made less or non-hazardous by biological degradation or chemical reactions occurring in or on the soil?
Please explain.

*2. Is run-on diverted away from the active portions of the land treatment facility?

*3. Is run-off collected?

4. Are food chain crops being grown on the facility property?

a. If "YES", can the facility operator document that arsenic, lead and mercury:

- will not be transferred to the crop or ingested by food chain animals or
- will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils.

b. Has notification of the growing of the food chain crops been made to the Regional Administrator?

5. Is there a written and implemented plan for unsaturated zone monitoring?

6. Are there records of the application dates, application rates, quantities and location of each hazardous waste placed in the facility?

7. Do the closure and post-closure:

a. control of migration into the groundwater?

b. control of run-off, particulate contamination?

c. compliance with growth of food crops (present)?

8. Is ignitable or reactive waste incorporated into the soil and the resulting waste no longer meets that definition? If "YES", explain.

9. Are incompatible wastes placed in the same land treatment area? If "YES", explain.

10. What is the area of the land receiving hazardous waste treatment?

LANDFILLS (\$265.300)

†1. Is run-on diverted away from the active portions of the landfill?

†2. Is run-off from active portions of the landfill collected?

* Effective date for these requirements is May 19, 1981.

† These requirements are effective November 19, 1981.

3. Is waste which is subject to wind dispersal controlled?
Explain.

—	—	—
---	---	---

4. Does the owner/operator maintain a map with:

- the exact location and dimensions of each cell
- the contents of each cell and approximate location of each hazardous waste type

—	—	—
---	---	---

—	—	—
---	---	---

5. Do the closure and post-closure plans address:

- control of pollutant migration via ground water?
- control of surface water infiltration?
- prevention of erosion?

—	—	—
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—	—	—
---	---	---

—	—	—
---	---	---

6. Is ignitable or reactive waste treated before being placed in the landfill?
Explain how you know.

—	—	—
---	---	---

b. Is the waste treated and stabilized so that free liquids are no longer present?

—	—	—
---	---	---

*9. Are containers holding liquid waste or waste containing free liquids placed in the landfill?

—	—	—
---	---	---

10. Are empty containers (e.g. those containing less than 1/2 inch of liquid) placed in the landfills?

—	—	—
---	---	---

If so, are they crushed flat, shredded or similarly reduced in volume before they are buried?

—	—	—
---	---	---

11. What is the approximate area of the hazardous waste landfill?

* Effective date for this requirement is November 19, 1981.

INCINERATORS AND THERMAL TREATMENT
(§§265.340 and 265.379)

YES NO DON'T
KNOW

1. What type of incinerator or thermal treatment is at the site (e.g. waterwall incinerator, boiler, fluidized bed, etc.)?

2. Was hazardous waste being incinerated or thermally treated during your inspection?
If "YES", answer all following questions.
If "NO", answer only questions 3 and 7.

3. Has waste analysis been performed (and written records kept) to include:

- heating value of the waste

- halogen content

- sulfur content

- concentration of lead

- concentration of mercury

NOTE: Waste analysis need not be performed on all wastes if there are documented data available to show waste composition that do not vary.
check here ☐

4. Does it appear that the incinerator is operating under (normal) conditions of operation without introducing hazardous waste?

5. Did it appear during monitoring and inspection that hazardous waste was introduced during hazardous waste incineration?

- waste feed

- auxiliary fuel feed

- air flow

- incinerator temperature

- scrubber flow

- scrubber pH

- relevant level controls

- Every hour for:

- stack plume (color and opacity)

5. Is there open burning of hazardous waste?

a. If "YES", what is being burned?
(only burning or detonation
of explosives is permitted)

b. If open burning or detonation of explosives is taking
place, approximately what is the distance from the open
burning or detonation to the property of others?

6. Does the incinerator appear to be operating
properly? (Do emergency shutdown controls
and system alarms seem to be in good working
order?) Please explain.

YES NO DON'T
KNOW

a. Is there any evidence of fugitive emissions?

7. Is the residue from the incinerator treated
by the owner as a hazardous waste?
Please explain.

8. What types of air pollution control devices (if any)
are installed on the incinerator?

If "YES", has it been treated or protected
from any material or conditions which may
cause it to ignite or react? If so,
explain how.

Are the incompatible wastes placed in
the same treatment process?
If "YES", explain.

5. Describe the treatment system at this facility.

REFERENCE NO. 6

STATE

P27/3

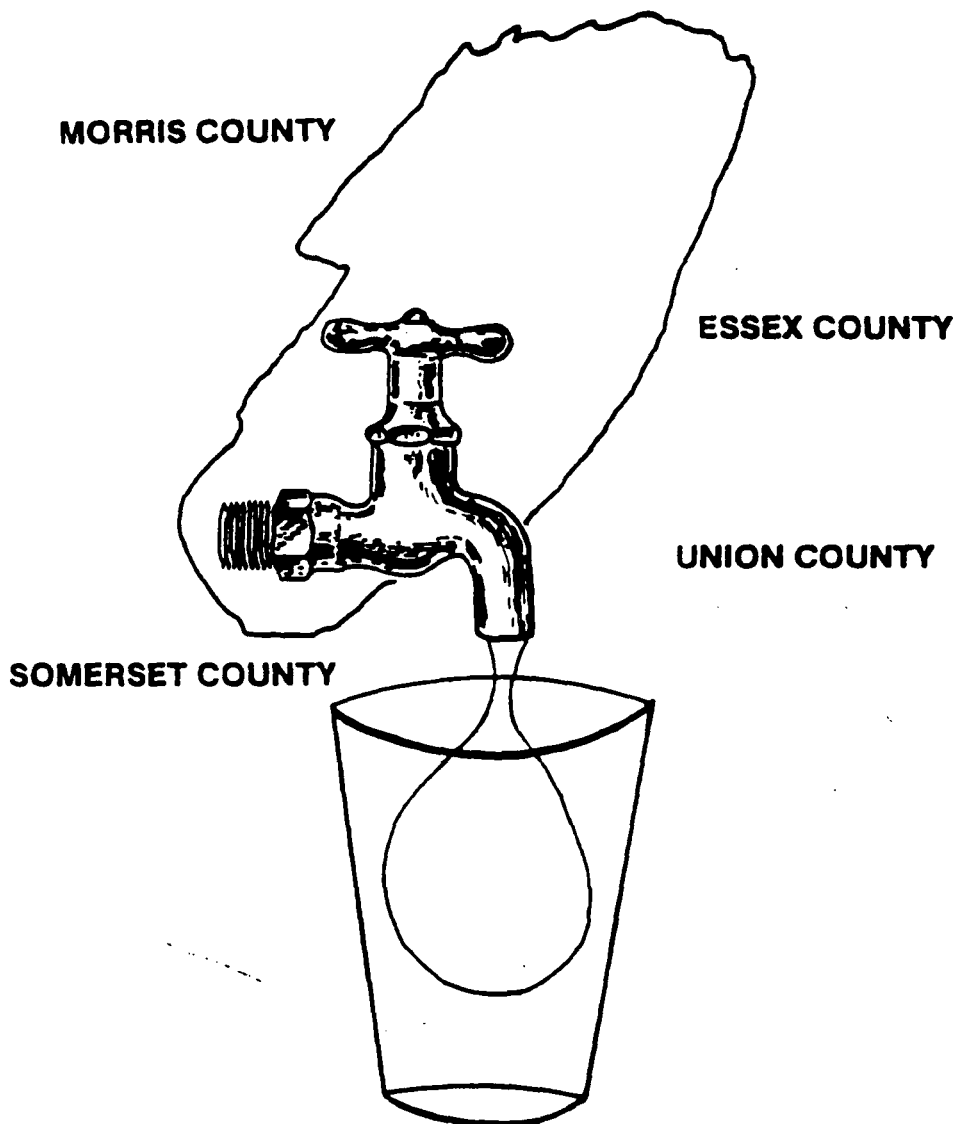
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H99

THE HYDROGEOLOGY OF THE BURIED VALLEY AQUIFER SYSTEM

RUTGERS UNIVERSITY
LIBRARY OF SCIENCE AND MEDICINE
GOVERNMENT DOCUMENTS DEPARTMENT

FEB 14 1983



PASSAIC RIVER COALITION

246 Madisonville Road
Basking Ridge, New Jersey 07920

(201) 766-7550

1983

size and number of the intersecting fractures. The yield of such rocks can vary considerably within a short distance, both horizontally and vertically. Because fractures are wider toward the surface due to weathering, a well in Precambrian rock is unlikely to supply much water below 300 feet. The 79 large-diameter public supply, industrial, and commercial wells operating in 1965 throughout Morris County yielded an approximate average of 121 gallons per minute (gpm), and the maximum and minimum yields were 400 and 5 gpm respectively. The larger amounts are usually associated with fault zones. (Gill and Vecchioli, 1965).

Water quality from Precambrian wells is generally good. Hardness ranges from soft (less than 50 ppm) to moderately hard (60-120 ppm); pH ranges from slightly acidic to slightly alkaline; and iron occurs in objectionable quantities in some areas (Gill and Vecchioli, 1965).

Newark Group: Brunswick Formation

The Brunswick Formation serves as an aquifer in the following communities: Chatham Borough, East Hanover Township, Florham Park Borough, Hanover Township, Harding Township, Lincoln Park Borough, Montville Township, Morris Township, Town of Morristown, Parsippany-Troy Hills Township, and Passaic Township in Morris County; Caldwell Borough, Fairfield Borough, Livingston Township, Millburn Township, North Caldwell Borough, Roseland Borough, West Caldwell Borough, and West Orange Town in Essex County; and Berkeley Heights Township, New Providence Borough, and Summit City in Union County (Gill and Vecchioli, 1965; Nichols, 1968a; Nemickas, 1976).

Table 2. Municipalities Entirely or Partially Within the Sole Source Aquifer Designated Area

Somerset County

Bernards Township
Bernardsville
Warren Township

Union County

Berkeley Heights
New Providence
Summit

Essex County

Caldwell
Essex Fells
Fairfield
Livingston
Millburn
North Caldwell
Roseland
West Caldwell

Morris County

Boonton
Boonton Township
Chatham
Chatham Township
Denville
Dover
East Hanover Township
Florham Park

Morris County (Cont'd)

Hanover Township
Harding Township
Jefferson Township
Kinnelon
Lincoln Park
Madison
Mendham
Mendham Township
Mine Hill
Montville Township
Morris Plains
Morristown
Morris Township
Mountain Lakes
Mt. Arlington
Passaic Township
Parsippany-Troy Hills Township
Randolph Township
Rockaway
Rockaway Township
Roxbury
Sparta
Victory Gardens
Wharton

Source: Federal Register Vol. 45, No. 91:30537.

REFERENCE NO. 7



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WASTE MANAGEMENT

32 E. Hanover St., CN 027, Trenton, N.J. 08625

JACK STANTON
DIRECTOR

03 MAR 1983

LINO F. PEREIRA
DEPUTY DIRECTOR

Adco Chemical Company
Robert Harvie
PO Box 128
Newark, NJ 07101

RE: Facility Operating Status

Dear Sir:

7H
ADCO
3/10/83

The Bureau of Hazardous Waste Engineering has reviewed your company's response to the Notice of Violation, Failure to Submit Annual Report. The Bureau finds that the response contains adequate information to determine the operating status of this facility with respect to N.J.A.C. 7:26-1 et seq., the New Jersey Hazardous Waste Management Regulations. The Bureau has determined that the company's hazardous waste treatment, storage or disposal facility as delineated in the company's RCRA Part A application and identified by the following EPA ID Number:

EPA ID NO. NJD 002154086

has been excluded from regulations under N.J.A.C. 7:26-1.1 et seq. because your facility accumulates hazardous waste on-site for less than 90 days. This exclusion classifies your facility solely as a generator provided the following conditions are complied with:

1. All such waste is, within 90 days or less, shipped off-site to an authorized facility or placed in an on-site authorized facility, as defined at N.J.A.C. 7:26-1.4.
2. The waste is placed in containers which meet the standards of N.J.A.C. 7:26-7.2 and are managed in accordance with N.J.A.C. 7:26-9.4(d).
3. The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container.
4. The generator complies with the requirements for owners and operators of N.J.A.C. 7:26-9.6 and 9.7 concerning preparedness and prevention, contingency plans and emergency procedures as well as N.J.A.C. 7:26-9.4(g) concerning personnel training.

New Jersey Is An Equal Opportunity Employer

5. For bulk accumulation of dry hazardous waste materials, the waste pile is managed according to the following:
- (i) The waste pile is no larger than 200 cubic yards; and
 - (ii) The pile shall be placed on an impermeable base that is compatible with the waste; and
 - (iii) Run-on shall be diverted away from the pile; and
 - (iv) Any leachate and run-off from the pile must be collected and managed as a hazardous waste.

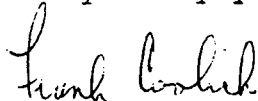
This written acknowledgement of the exclusion of the above identified facility from N.J.A.C. 7:26-1 et seq. is based expressly on the review of the aforementioned correspondence. This letter makes no claim as to the extent and physical condition of the actual hazardous waste activities occurring at the site mentioned above.

Your company's hazardous waste facility above is no longer included in DEP's list of "existing facilities" (see N.J.A.C. 7:26-1.4 and 12.3) and therefore does not need to conform with the interim operating requirements of N.J.A.C. 7:26-1 et seq. for "existing facilities" which would include the TSD facility annual report. It is the company's responsibility to operate within the conditions listed above. To operate a hazardous waste facility without prior approval from the DEP is a violation of the Solid Waste Management Act N.J.S.A. 13:1E-1 et seq.

As a result of the conclusions previously made, the Notice of Violation entitled "Failure to Submit Annual Report" signed by Mr. David Shotwell is rescinded and need not be complied with.

If you have any questions on this matter, please call my office at (609) 292-9880.

Very truly yours,



Frank Coolick, Chief
Bureau of Hazardous Waste Engineering

FC:jb

cc Dave Shotwell
NJDEP, Division of Waste Management

Tom Taccone
USEPA, Region II

REFERENCE NO. 8

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CM-029
TRENTON, N.J. 08625

Mr. Arthur Straubing, P.E.
Straubing & Rubin
6 South Orange Avenue
South Orange, New Jersey 07079

JAN 17 1984

RE: Adco Chemical Co. - Newark
TSD Declassification Request - NJD002154086

Dear Mr. Straubing:

This will confirm our conversation of January 12, 1984 concerning the subject facility. Adco continuously recycles caustic material through the process train until the material has lost its ability to provide adequate cleaning. This material is then discharged into the Passaic Valley Sewerage Commissioners (PVSC) line without further treatment. At this point, the waste has a pH of less than 9.5 (PVSC's limitation). Since the neutralization of the original caustic occurs as part of the manufacturing process, it is not considered to be a wastewater treatment unit process.

Therefore, Adco will be declassified as a TSD facility for T01 activities. In addition, Adco will not be considered an Industrial Waste Management Facility under the New Jersey Pollutant Discharge Elimination System Regulations. Adco is required to comply with all Rules and Regulations of the PVSC concerning discharge to the sewer.

If there are any questions, please contact me at (609) 292-4860.

Very truly yours,

ORIGINAL signed and mailed

Kenneth Goldstein, P.E., Chief
Industrial Pretreatment Section
Water Quality Management

WQM8:tme

cc: Frank Coolick (DWM)
Dr. David Lau (DWM)
~~Joel Colaninno~~ (EPA)

REFERENCE NO. 9



Chemical Company

49 RUTHERFORD STREET
P.O. BOX 128

NEWARK, N.J. 07101
201-589-0880

Certified Mail # P143689180
R.R.R.

July 2, 1982

Jul

Kenneth S. Stoller, P.E.
Acting Director
Air & Waste Management Division
United States Environmental Protection Agency
Region II
25 Federal Plaza
New York, N.Y. 10278

Re: Financial Liability Requirements for Hazardous Wastes T.S. & D.
Facilities as they apply to Adco Chemical Co., Newark, N.J.
EPA # NJD002154086

Dear Sir:

Adco Chemical Company is a manufacturing concern. We do not treat or dispose of any bi-products from our manufacturing stream on site. All hazardous waste is shipped to approved facilities for safe disposal. We have, on occasion, had to store generated waste for periods longer than 90 days. Thus we have obtained interim status as a T.S. & D. Facility.

At this time we anticipate that by July 15, 1982 we will have disposed of all wastes stored for longer than 90 days. When this has been accomplished we will change our status from a treat, storage, and disposal facility to that of hazardous waste generator.

When the above has been completed we will call Dr. Richard Baker to ammend our filing status at which time the regulations will not apply to Adco Chemical Co.

If there are any questions or comments please do not hesitate to call me at (201) 589-0880.

Very truly yours

ADCO CHEMICAL COMPANY

Steven C. Holland
Steven C. Holland
Vice President

NEW YORK, N.Y.
REGION II
PROTECTION AGENCY
U.S. ENVIRONMENTAL
JUL 8 3 40 PM '82
DIVISION
AIR & WASTE MANAGEMENT

REFERENCE NO. 10

LEGEND



AREA SERVED BY PRIVATE WATER SERVICE COMPANIES



AREA SERVED BY REGIONALLY OWNED WATER SERVICE COMPANIES



AREA SERVED BY MUNICIPALLY OWNED WATER SERVICE COMPANIES



AREA NOT PRESENTLY SERVED BY WATER SERVICE



PUBLIC SUPPLY WELLS



SURFACE WATER INTAKE



MAJOR WATER MAINS



TOWNSHIP BOUNDARIES



COUNTY BOUNDARIES



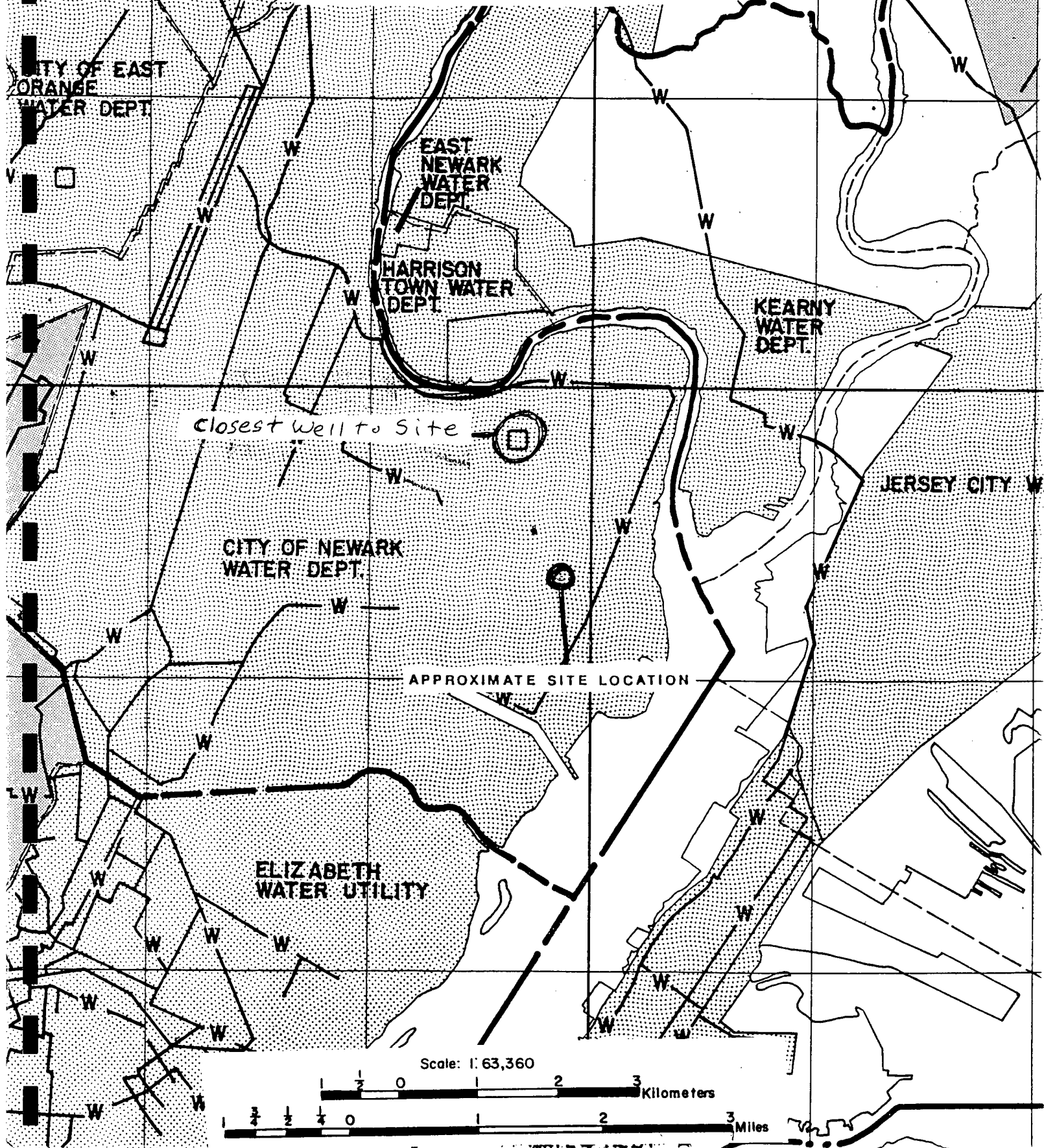
STATE BOUNDARIES

ALL MAP COORDINATES ARE FOR THE LOWER LEFT HAND CORNER.

LOCATION AND OWNERS OF PUBLIC SUPPLY WELLS

26-01-218	Lincoln Park Water Company
26-01-153	Evans Water Company
26-01-168	Lincoln Park, Boro of
26-01-259	Mountain View Water Company
26-01-265	Twp. of Wayne
26-01-268	Boro of Lincoln Park
26-01-338	Twp. of Wayne

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER SUPPLY OVERLAY
SHEET 26



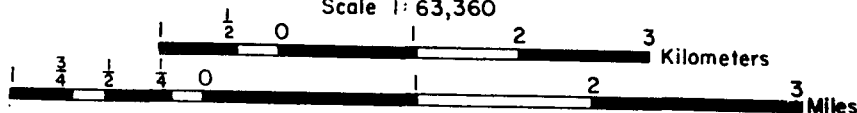
DRAINAGE BASIN OVERLAY SHEET 26

APPROXIMATE SITE LOCATION

HUDSON

- COUNTY BOUNDARY
- DRAINAGE BASIN BOUNDARY
- RIVER BASIN BOUNDARY
- DRAINAGE BASIN NAME
- STREAMS AND RIVERS
- FLOOD PRONE AREAS
(delineated by U.S.G.S.)

Scale 1:63,360



GEORGE HALASI-KUN, TOPOGRAPHIC ENGINEER
JOHN G. KREMPER, CARTOGRAPHER

JOSEPH E. McLEAN, Commissioner



REFERENCE NO. 11

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual (HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

TABLE 2
PERMEABILITY OF GEOLOGIC MATERIALS*

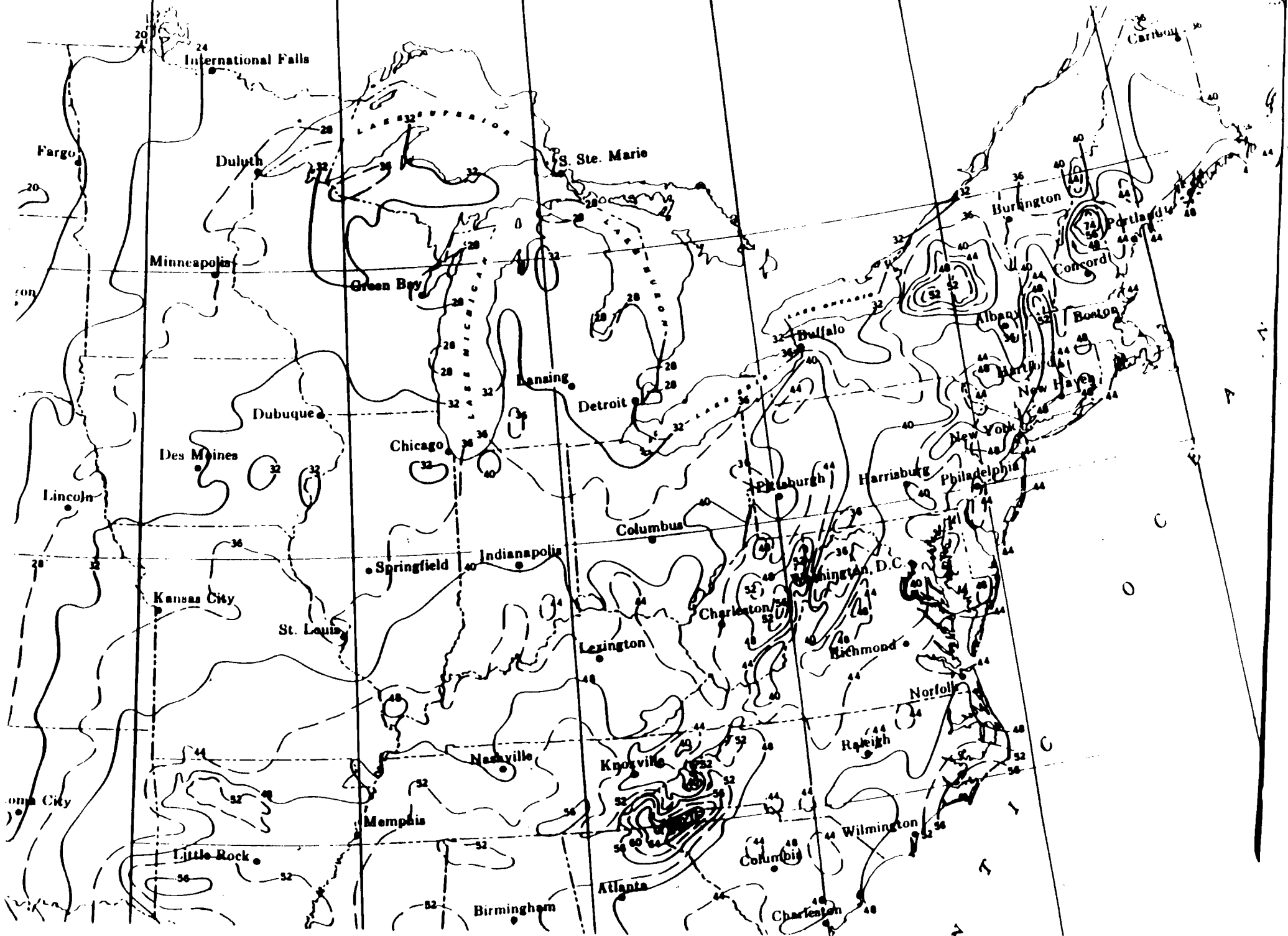
Type of Material	Approximate Range of Hydraulic Conductivity	Assigned Value
Clay, compact till, shale; unfractured metamorphic and igneous rocks	$<10^{-7}$ cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; loamy sands; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas; karst limestone and dolomite	$>10^{-3}$ cm/sec	3

*Derived from:

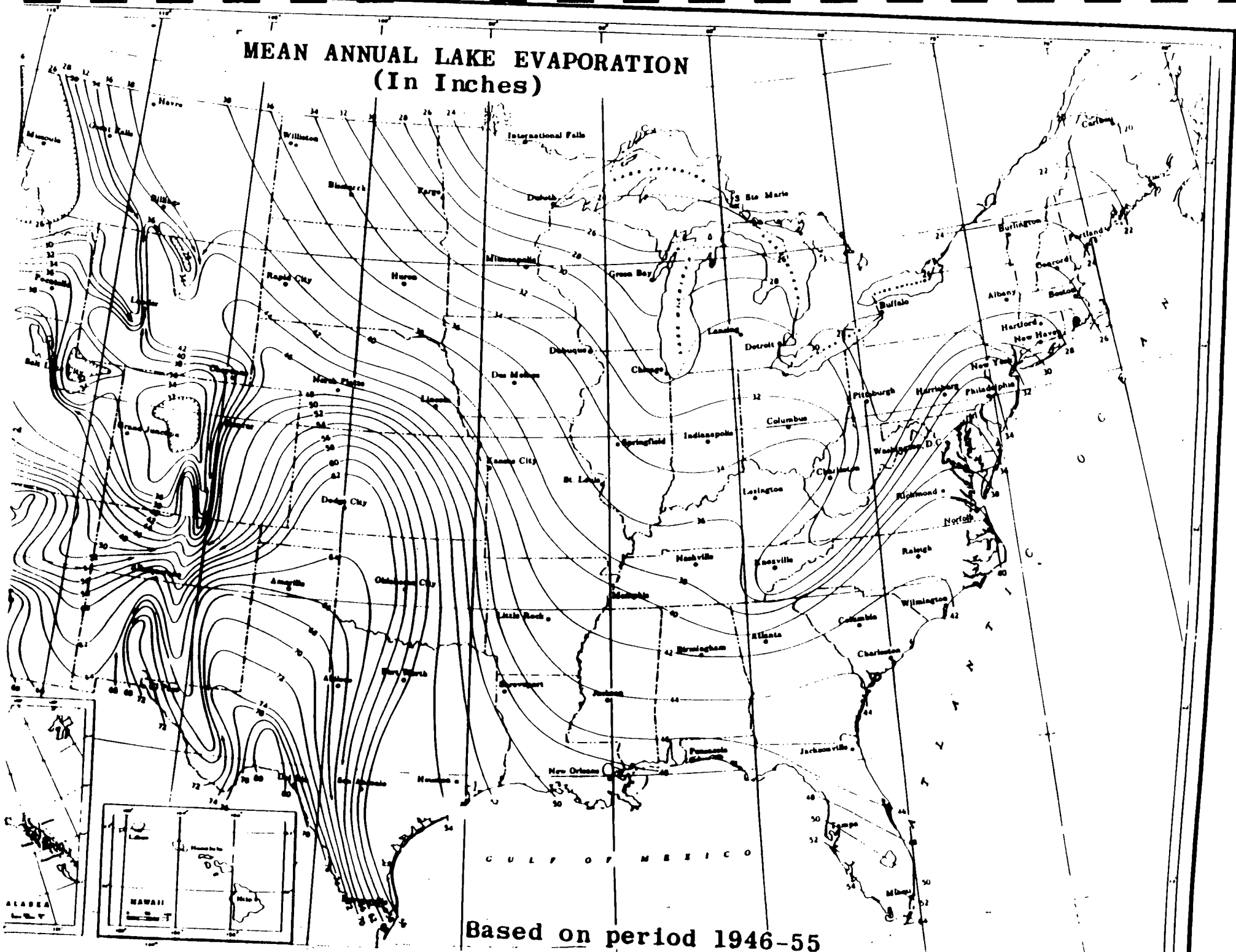
Davis, S. N., Porosity and Permeability of Natural Materials in Flow-Through Porous Media, R.J.M. DeWiest ed., Academic Press, New York, 1969

Freeze, R.A. and J.A. Cherry, Groundwater, Prentice-Hall, Inc., New York, 1979

NORMAL ANNUAL TOTAL PRECIPITATION (Inches)

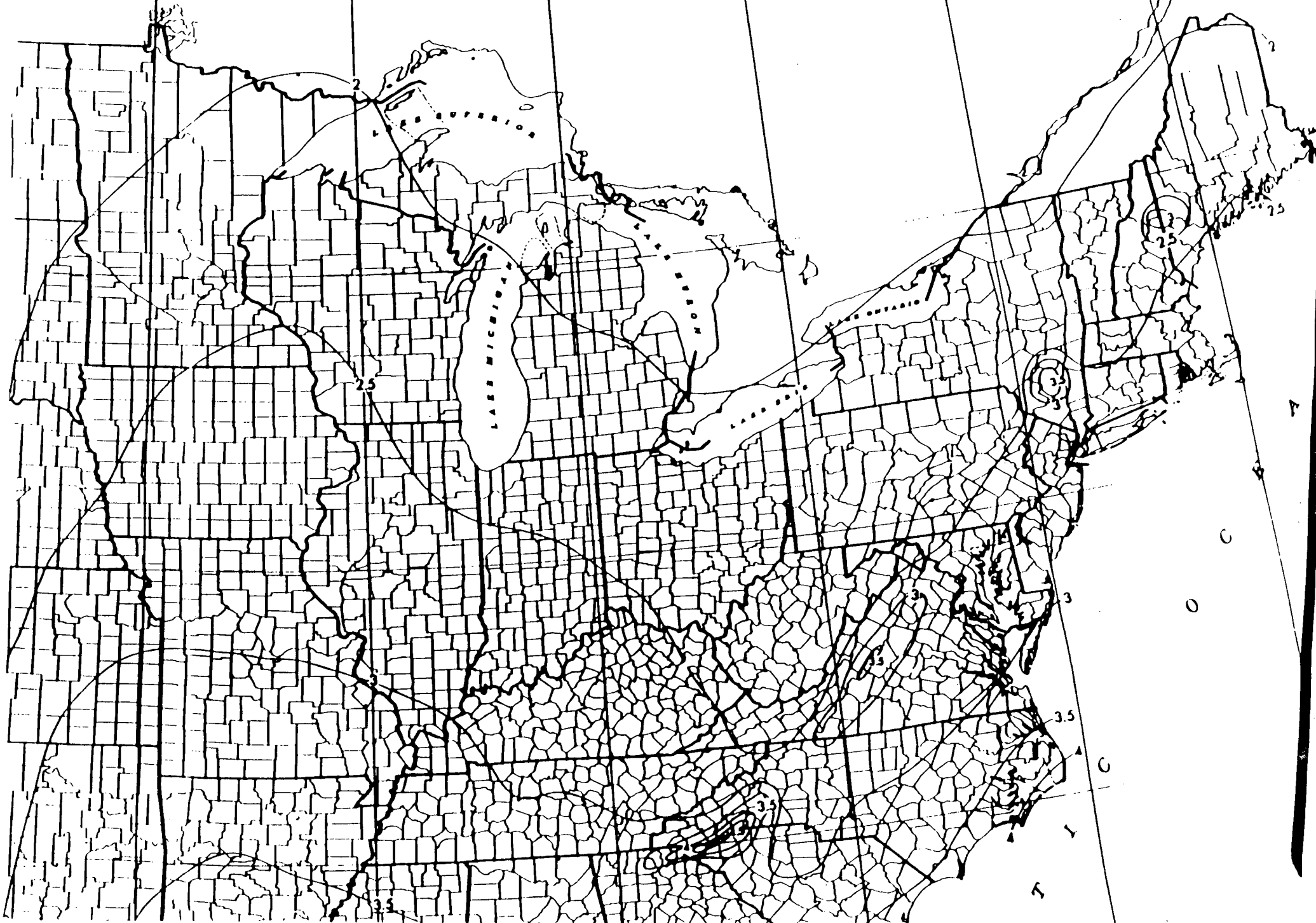


MEAN ANNUAL LAKE EVAPORATION (In Inches)



Based on period 1946-55

1 YEAR 24-HOUR RAINFALL (inches)



REFERENCE NO. 12

Newark

N. J.—N. Y.—PA.

1:250 000-scale map of
**Atlantic Coast
Ecological Inventory**



Produced by
**U. S. FISH AND WILDLIFE
SERVICE**

1090

NOTES

SPECIES WITH SPECIAL STATUS

Shortnose sturgeon (110) is found in coastal waters depicted on the Newark sheet and migrates up the Hudson River.

American shad (116) is threatened in New Jersey.

Bald eagle and peregrine falcon (505, 507) migrate along coastal areas depicted on the Newark sheet.

AQUATIC ORGANISMS

Due to scale limitations, only representative estuarine and riverine systems are shown.

Species that can be found in the ocean waters off New Jersey depicted on the Newark sheet include:

110g, 116g, 57cdf, 58abcdf, 59de, 65abcdf, 111g, 113g, 115g, 117cd, 129cdfg, 130cdf, 138acdf, 139d, 140cd, 142ad, 147bcd, 149df, 154cdf, 157f, 158a, 160cdf, 173cdf, 177cdf, 178f, 180ad, 181cd.

Generally includes the following species:

116g, 59abcdf, 111g, 112cd, 113g, 115g, 117cd, 128cdg, 129cdfg, 138acdf, 139df, 140cdf, 142f, 147bcd, 149bdf, 157f, 158abf, 160cdf, 177cdf, 178f, 180ad.

Generally includes the following species:

116g, 59bcf, 112cd, 113g, 115g, 117bc, 128bcfg, 129cdfg, 138bcf, 139bd, 140bcd, 147b, 149b, 158b, 160bcd, 167b, 180abd.

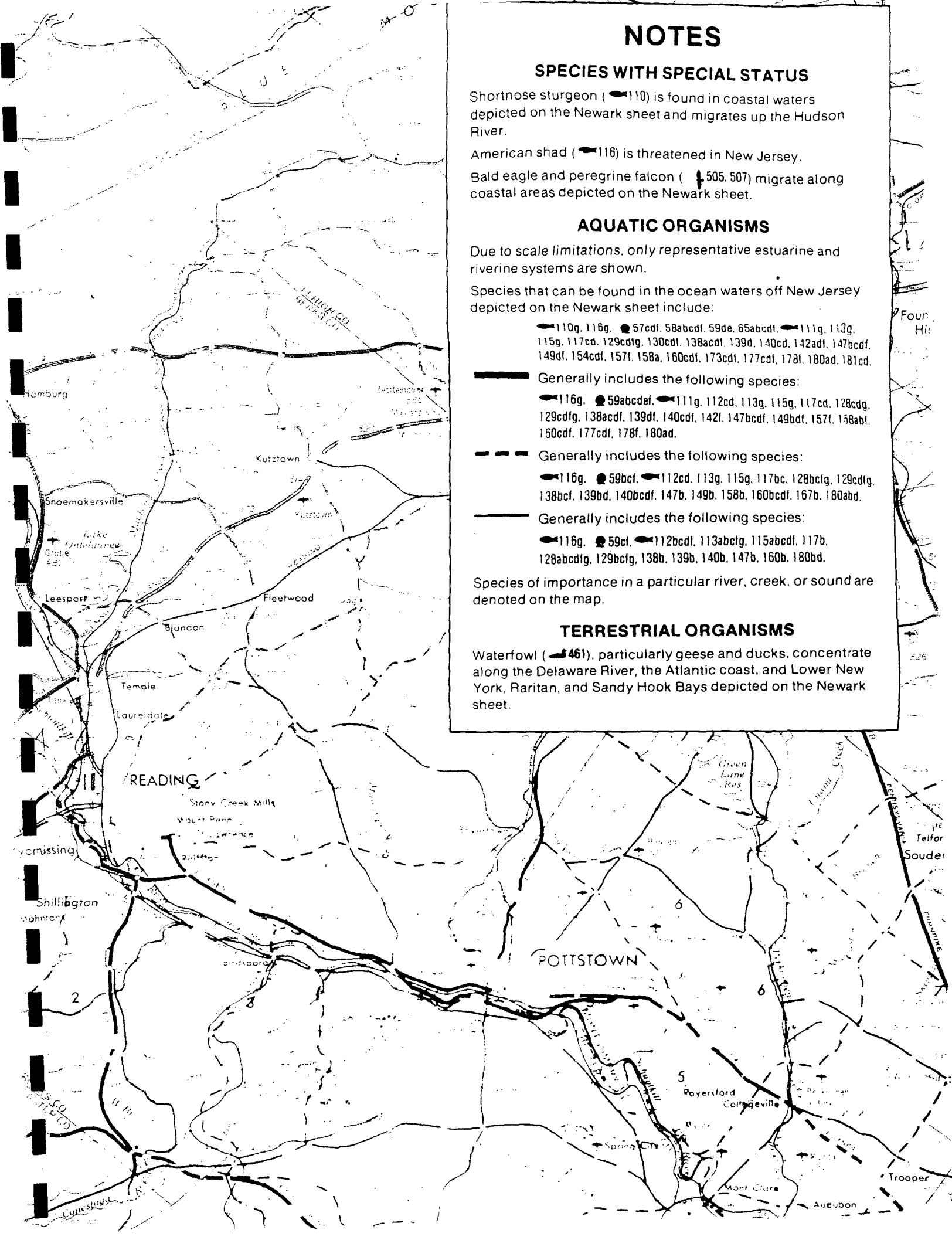
Generally includes the following species:

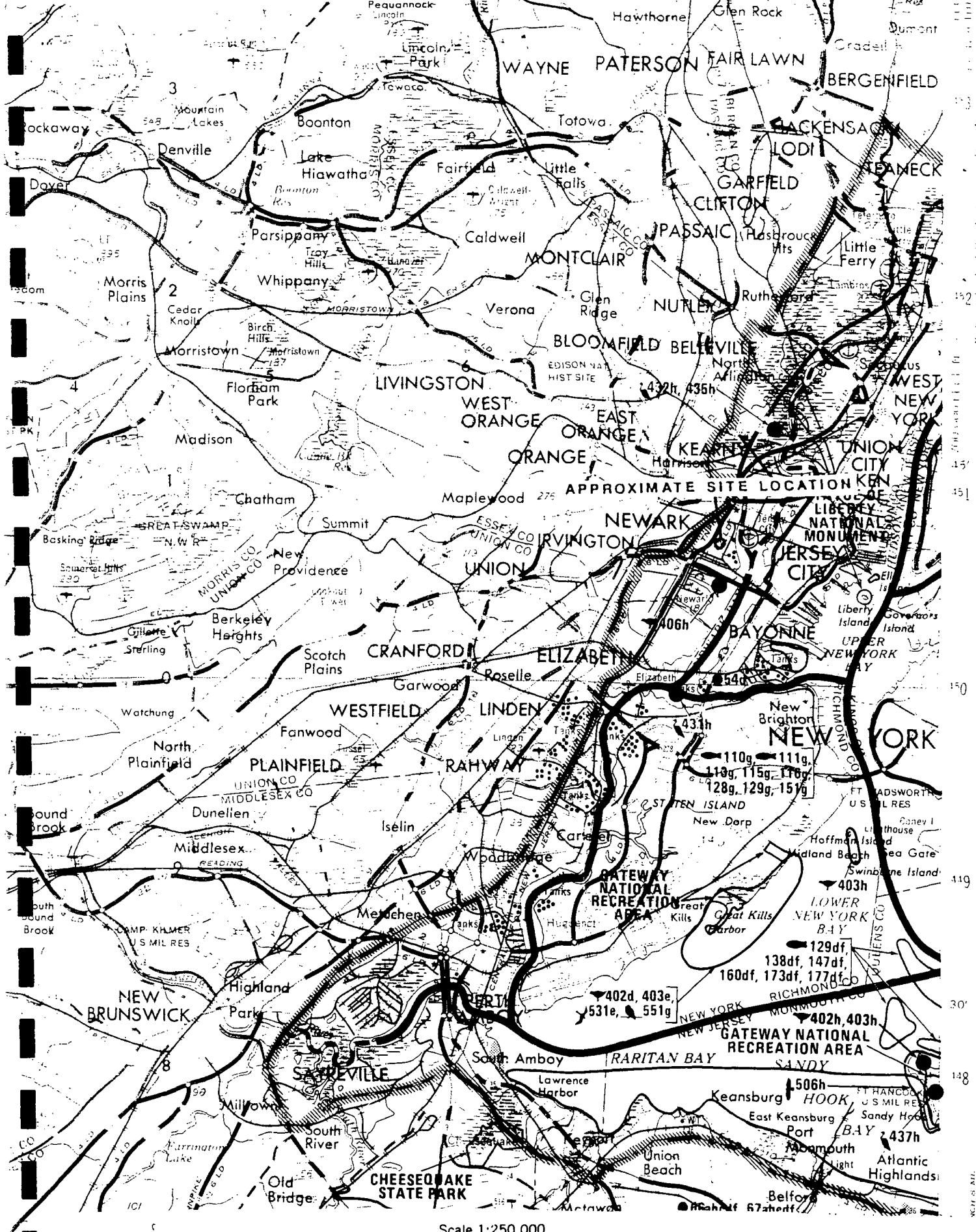
116g, 59cf, 112bcd, 113abcf, 115abcf, 117b, 128abcf, 129bcf, 138b, 139b, 140b, 147b, 160b, 180bd.

Species of importance in a particular river, creek, or sound are denoted on the map.

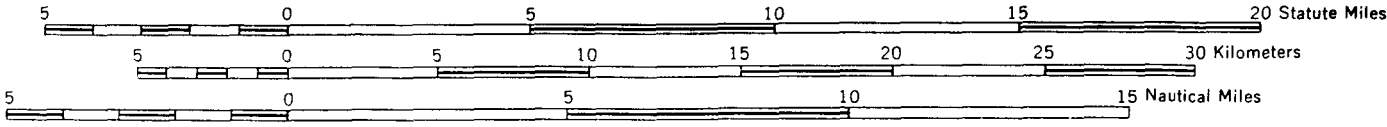
TERRESTRIAL ORGANISMS

Waterfowl (461), particularly geese and ducks, concentrate along the Delaware River, the Atlantic coast, and Lower New York, Raritan, and Sandy Hook Bays depicted on the Newark sheet.





Scale 1:250,000



REFERENCE NO. 13



Surface Water Classifications

Surface Water Quality Standards
N.J.A.C. 7:9-4

May 1985

(Stockholm) - Brook between Hamburg Turnpike and Williamsville-Stockholm Rd. to its confluence with Lake Stockholm Brook, north of Rt. 23	FW1 [tm]
LITTLE POND BROOK (Oakland) - Entire length	FW2-TP (C1)
LOANTAKA BROOK	
(Green Village) - Entire length, except segment described below	FW2-NT
(Great Swamp) - Brook and all tributaries within the boundaries of Great Swamp National Wildlife Refuge	FW2-NT (C1)
LUD-DAY BROOK	
(Camp Garfield) - Source to confluence with a tributary from Camp Garfield	FW1
MACOPIN RIVER	
(Newfoundland) - Source to Echo Lake dam	FW2-NT
(Newfoundland) - Echo Lake dam to Pequannock River	FW2-TM
MEADOW BROOK (Wanaque) - Skyline Lake to Wanaque River	FW2-NT
MILL BROOK	
(Randolph) - Source to Rt. 10 bridge	FW2-TP (C1)
(Randolph) - Rt. 10 bridge to Rockaway River	FW2-NT
MORSES CREEK - Entire length	FW2-NT/SE3
MOSSMAN'S BROOK - See CLINTON BROOK	
MT. TABOR BROOK (Morris Plains) - Entire length	FW2-NT
NEWARK BAY (Newark) - North of an east-west line connecting Elizabethport with Bergen Pt., Bayonne up to the mouths of the Passaic and Hackensack Rivers	SE3
NOSSENZO POND (Upper Macopin)	FW2-NT (C1)
OAK RIDGE RESERVOIR (Oak Ridge)	FW2-TM
OAK RIDGE RESERVOIR (Oak Ridge) - Northwestern tributary to Reservoir	FW1 [tm]
OVERPECK CREEK (Palisades Park) - Entire length	FW2-NT/SE2
PECKMAN RIVER (Verona) - Entire length	FW2-NT
PACACK BROOK	
(Stockholm) - Source to Pequannock River, excluding Canistear Reservoir, except segments described separately below	FW2-NT
(Canistear) - Brook and tributaries upstream of Canistear Reservoir located entirely within the boundaries of the Newark Watershed	FW1
PASSAIC RIVER	
(Mendham) - Source to Rt. 202 bridge (Van Doren's Mill), except tributaries described separately below	FW2-TM
(Paterson) - Rt. 202 bridge to Dundee Lake dam	FW2-NT
(Little Falls) - Dundee Lake dam to confluence with Second River	FW2-NT/SE2
(Newark) - Confluence with Second River to mouth	SE3

REFERENCE NO. 14



Surface Water Quality Standards

SURFACE WATER QUALITY STANDARDS

N.J.A.C. 7:9-4.1 et seq.

May 1985

- (c) In all FW2 waters the designated uses are:
1. Maintenance, migration and propagation of the natural and established biota;
 2. Primary and secondary contact recreation;
 3. Industrial and agricultural water supply;
 4. Public potable water supply after such treatment as required by law or regulation; and
 5. Any other reasonable uses.
- (d) In all SE1 waters the designated uses are:
1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
 2. Maintenance, migration and propagation of the natural and established biota;
 3. Primary and secondary contact recreation; and
 4. Any other reasonable uses.
- (e) In all SE2 waters the designated uses are:
1. Maintenance, migration and propagation of the natural and established biota;
 2. Migration of diadromous fish;
 3. Maintenance of wildlife;
 4. Secondary contact recreation; and
 5. Any other reasonable uses.
- (f) In all SE3 waters the designated uses are:
1. Secondary contact recreation;
 2. Maintenance and migration of fish populations;
 3. Migration of diadromous fish;
 4. Maintenance of wildlife; and
 5. Any other reasonable uses.
- (g) In all SC waters the designated uses are:
1. Shellfish harvesting in accordance with N.J.A.C. 7:12;

REFERENCE NO. 15

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

Adco Chemical Inc.

LATITUDE 40:42:45 LONGITUDE 74: 8:22 1980 POPULATION

	KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	*38	0	1	1824	45224	122913	253966	423928
RING	*38	0	1	1824	45224	122913	253966	423928
TOTALS								

GEMS> I

Adco Chemical Inc.

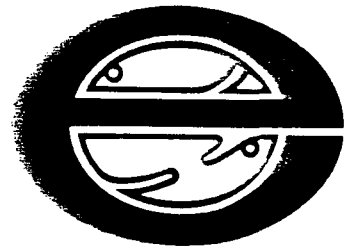
LATITUDE 40:42:45 LONGITUDE 74: 8:22 1980 HOUSING

	KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	*100		1	615	15170	44530	87670	147986
RING	*100		1	615	15170	44530	87670	147986
TOTALS								

Distance	Population	Houses
1/4	38	10
1/2	39	11
1	1863	626
2	47087	15796
3	170000	60326
4	423966	147996

*House count from Topographic map "Elizabeth, N.J. Quadrangle" and conversion to population assuming 3.8 persons per house.

REFERENCE NO. 16



HYDROGEOLOGIC ASSESSMENT

CENTRAL STEEL DRILLING COMPANY

700 DOREMUS AVENUE

NEWARK, N.J. 07105

Prepared by: Paul B. Dahlgren
Senior Hydrogeologist

APRIL 9, 1965

1. INTRODUCTION

As a part of an environmental investigation conducted for Central Steel Drum Company by Environics, water levels in the monitor wells installed on that property were recorded on three occasions (May 18 and 31, and November 19, 1984). The levels measured in May were included in a report dated June 1, 1984, in which test boring and monitor well installation operations were described. The data from November were included in a report dated February 6, 1985, which was a report of sampling operations and a transmittal of analytical data from groundwater samples.

A well location and elevation survey was conducted by B2R Consultants on March 1, 1985. A copy of this survey (see figure 1) was received by Environics on March 23, 1985. Receipt of the survey data has made possible completion of the Hydrogeologic Assessment presented in this report.

Table 1 is a summary of elevation data for inner and outer well casings, and groundwater on the three dates of measurement. Depth to water information is not available for wells 103 and 203 for May 18. Well 103 was destroyed prior to the November sampling and subsequent survey. The surveyor measured the elevation of the broken casing (8.11 feet). From this elevation, a value of 8.01 was calculated for the water elevation of May 31. This number must, however, be used with caution.

2. SUMMARY OF SITE HYDROGEOLOGY

In this report, the term "aquifer" will be used to describe the geologic units monitored by the wells installed on-site. Neither the shallow water table aquifer nor the deeper confined aquifer would be capable of exploitation for a water supply. Even without deterioration of water quality resulting from the industrial nature of the area, the proximity to salt water and the poor pumping characteristics encountered in both aquifers would make them unusable as a water supply.

The shallow water table aquifer varies in thickness between 4 feet at the southwestern corner (wells 101 & 201), to 12 feet at the southeastern corner (wells 104 & 204).
The soil consists of re-worked (fill) sand, gravel, silt and clay.

The base of the water table system is a silty clay confining layer. The geometry of the confining layer is shown on figure 2 in the form of contours on the upper and lower surfaces. The upper surface of this confining unit appears to slope "radially" from a high point at the southwestern corner. The observed slope (approximately 2%) apparently exerts little or no influence on flow in the overlying shallow aquifer system.

The confining layer is thickest (13 to 14 feet) along a northwest to southwest trending line between wells 103/203

Water elevation data for the shallow aquifer at the Central Steel Drum Site for May 18, May 31 and November 19, 1984 are presented on figures 3, 4 and 5 respectively.

Data from both occasions in May show a nearly static groundwater condition. The maximum difference in water elevations between the shallow wells on the May 18 measurement is less than 0.5 feet. There is a slight apparent slope to the southwest. However, considering the insignificant variation in the elevation of the water table surface, measured in wells which are hundreds of feet apart, virtually no certainty can be placed on that direction.

Results are similar for May 31, except that the water table is approximately 1 foot higher. As seen in table 1 and figure 4, the uncertain value for well 103 is consistent with the other 3 wells, suggesting a southwesterly flow direction. However, as with data from the previous occasion, no definite interpretation can be made.

Measurements from the 3 wells available on November 19, 1984 (figure 5) suggest a gradient to the north. The maximum difference in water elevation on that date is slightly more than 1 foot. For a water table system, with wells spaced hundreds of feet apart, such a difference in elevation is insignificant.

and 101/201. The layer thins to approximately 8 feet at the northwest and southeast corners of the property. The lower surface of the confining layer slopes eastward as shown on figure 2 at slightly less than 2%. Available evidence suggests that this layer is continuous throughout the property.

The confined aquifer consists of silty sand and sandy silt. Thickness of the system was not determined.

3. FLOW IN THE SHALLOW SYSTEM

Groundwater in the shallow aquifer exists under water table conditions. In such a system, hydrostatic pressure at the top of the saturated zone is atmospheric. Flow direction is controlled by the hydraulic gradient, which is equal to the slope on the water table surface.

The determination of hydraulic gradient in a water table aquifer can be very complex due to the number of factors which may exert control, such as surface topography, surface water bodies, and variations in the permeability of the ground surface. In an area such as the site in question, the distribution of buildings and pavement, variation in the permeability of fill material, and even differential compaction, as might be induced by heavy vehicle traffic may all have an effect.

2. SUMMARY OF SITE HYDROGEOLOGY

In this report, the term "aquifer" will be used to describe the geologic units monitored by the wells installed on-site. Neither the shallow water table aquifer nor the deeper confined aquifer would be capable of exploitation for a water supply. Even without deterioration of water quality resulting from the industrial nature of the area, the proximity to salt water and the poor pumping characteristics encountered in both aquifers would make them unusable as a water supply.

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The confining layer is thickest (13 to 14 feet) along a northwest to southwest trending line between wells 103/203

TABLE 1

WELL AND GROUNDWATER ELEVATION DATA

WELL NUMBER	WELL ELEVATION		WATER ELEVATION		
	OUTER CASING	INNER CASING	5/18/84	5/31/84	11/19/84
101	10.91	10.78	6.19	7.30	6.39
102	8.49	8.36	6.47	7.88	5.50
103	DESTROYED (8.11)*		-	(8.01)	-
104	9.32	9.07	6.55	7.49	6.57
201	8.48	8.33	1.33	1.98	2.33
202	10.14	9.89	0.44	1.01	1.50
203	10.96	8.74	-	2.80	3.06
204	8.23	7.98	2.35	2.93	3.05

* () INDICATES QUESTIONABLE VALUE

NOTES:
 HORIZONTAL DATUM PER
 N.J. GEODETIC CONTROL
 SURVEY MONUMENTS
 NO. 641 AND NO. 9679.
 VERTICAL DATUM IS NGVD
 PER CGS MONUMENT
 NO. Z-37. PUBLISHED
 ELEVATION 10.072'.
 PROPERTY LINES SHOWN
 ARE APPROXIMATE AND
 ARE BASED ON TAX MAP
 DATA; DEEDS PROVIDED
 BY CLIENT.

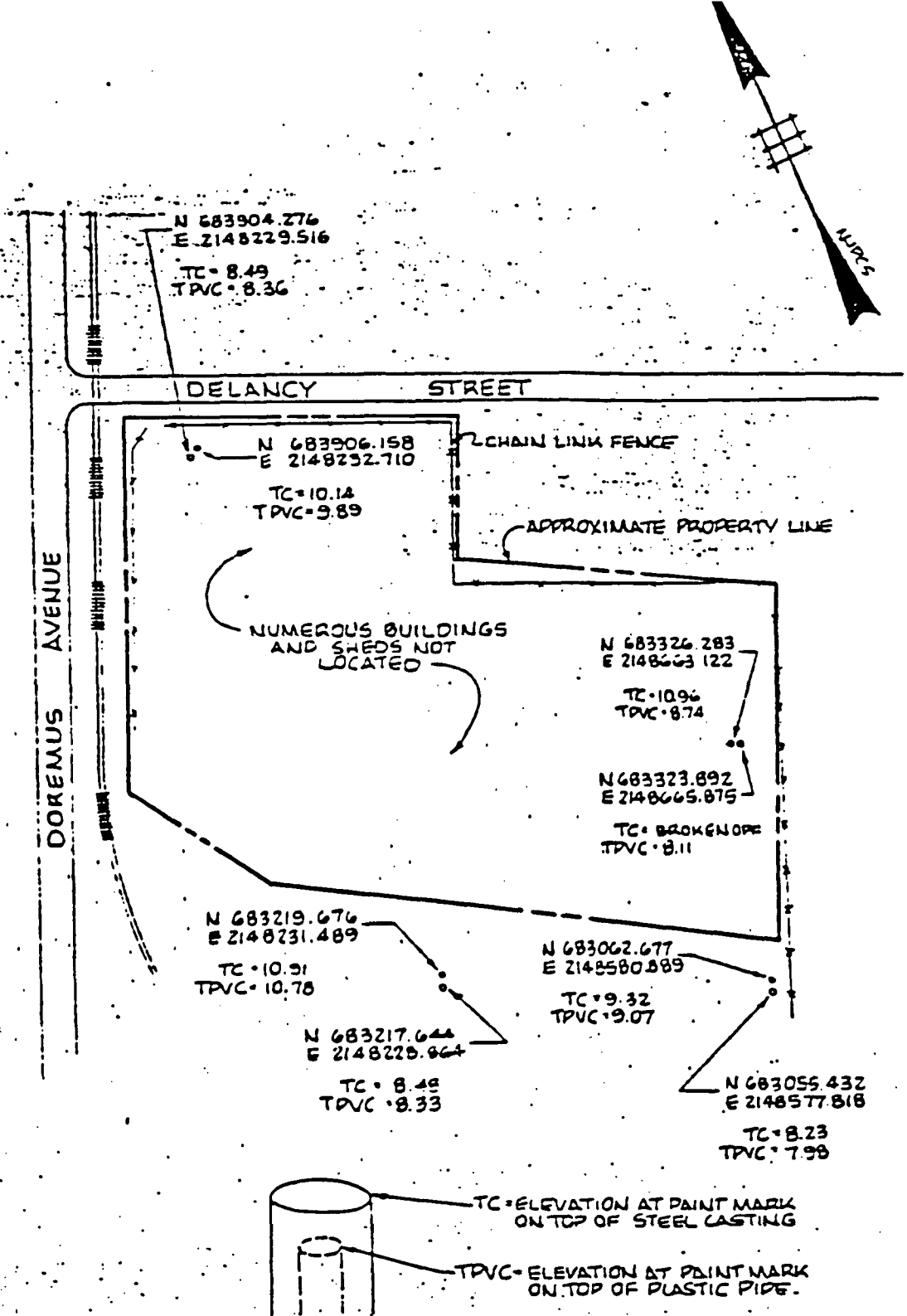


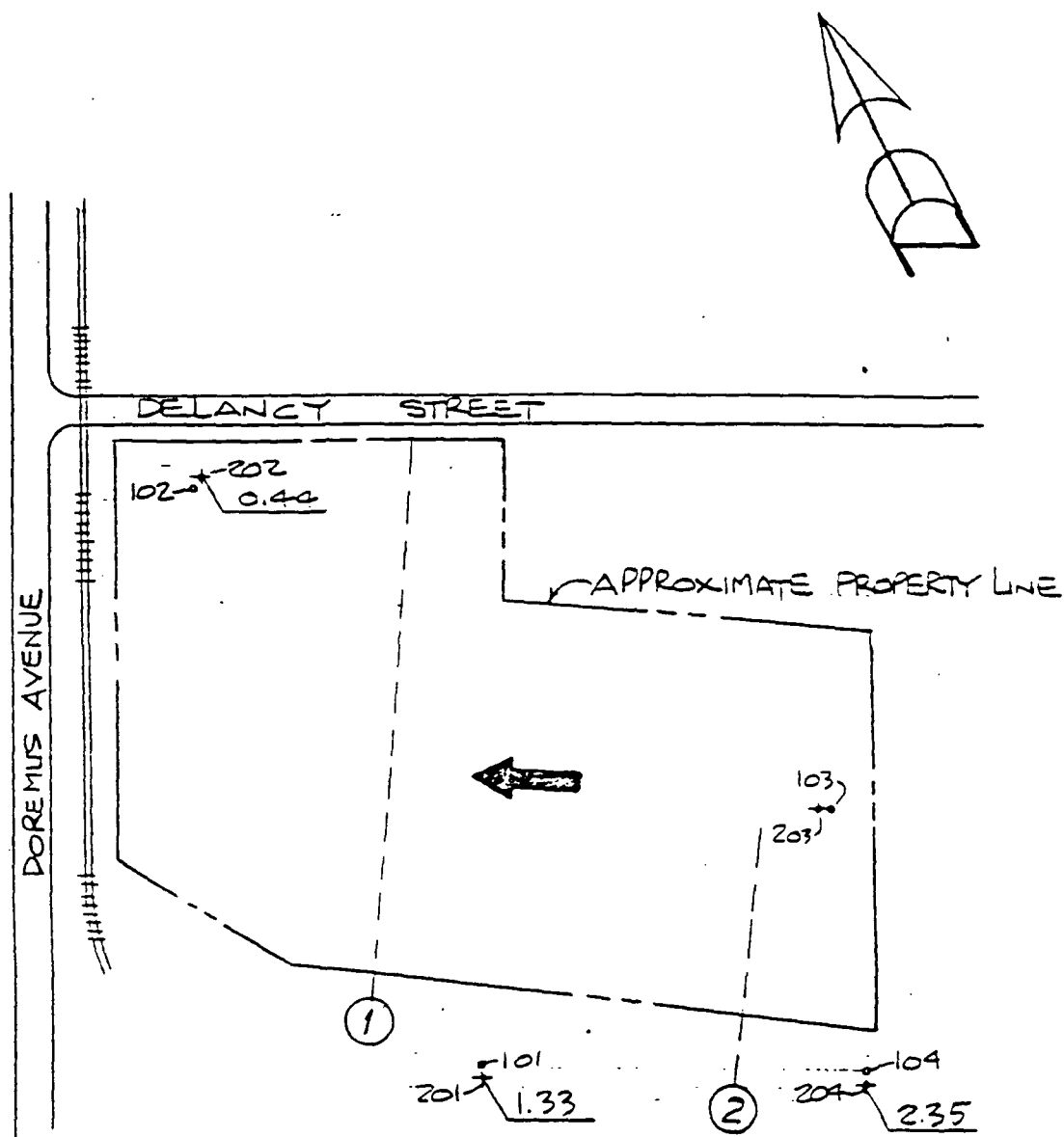
FIGURE NO. 1

SKETCH SHOWING LOCATION OF WELLS LOT 1, BLK 5074 CITY OF NEWARK COUNTY OF ESSEX NEW JERSEY	Bruce R. Blair DATE SIGNED 3/14/85 BRUCE R. BLAIR B.R. Consultants 323 RT. 208 HILLSBOROUGH, NJ 08578 DUPLICATION IS A VIOLATION OF THE COPYRIGHT LAW	31.85 1" = 200' 1" = 1' 122 22-24 DLS 848 64-293
---	--	---

4 FLOW IN THE DEEP SYSTEM

The deep aquifer system at the site is a confined or semi-confined system. Such a system is saturated throughout, and hydrostatic pressure at the top of the aquifer is greater than atmospheric. Consequently, when tapped by a well, water will rise above the bottom of the confining layer, to a level which represents a point on an imaginary plane known as the "potentiometric surface". Flow direction is determined by the hydraulic gradient, which is equal to the slope of the potentiometric surface.

Contours on the potentiometric surface for the 3 sets of water elevation data are shown on figures 6, 7 and 8. Examination of these figures shows a virtually identical pattern on the three sets of measurements. In each case, the hydraulic gradient slopes in a direction slightly north of west, at a slope of 1 foot vertical to 400 feet horizontal, or 0.0025. Since there are no data available on the thickness or permeability of the confined aquifer, it is not possible to estimate the rate of flow in that system. It may be stated with certainty, however, that there is flow in the direction indicated on the figures.



EXPLANATION

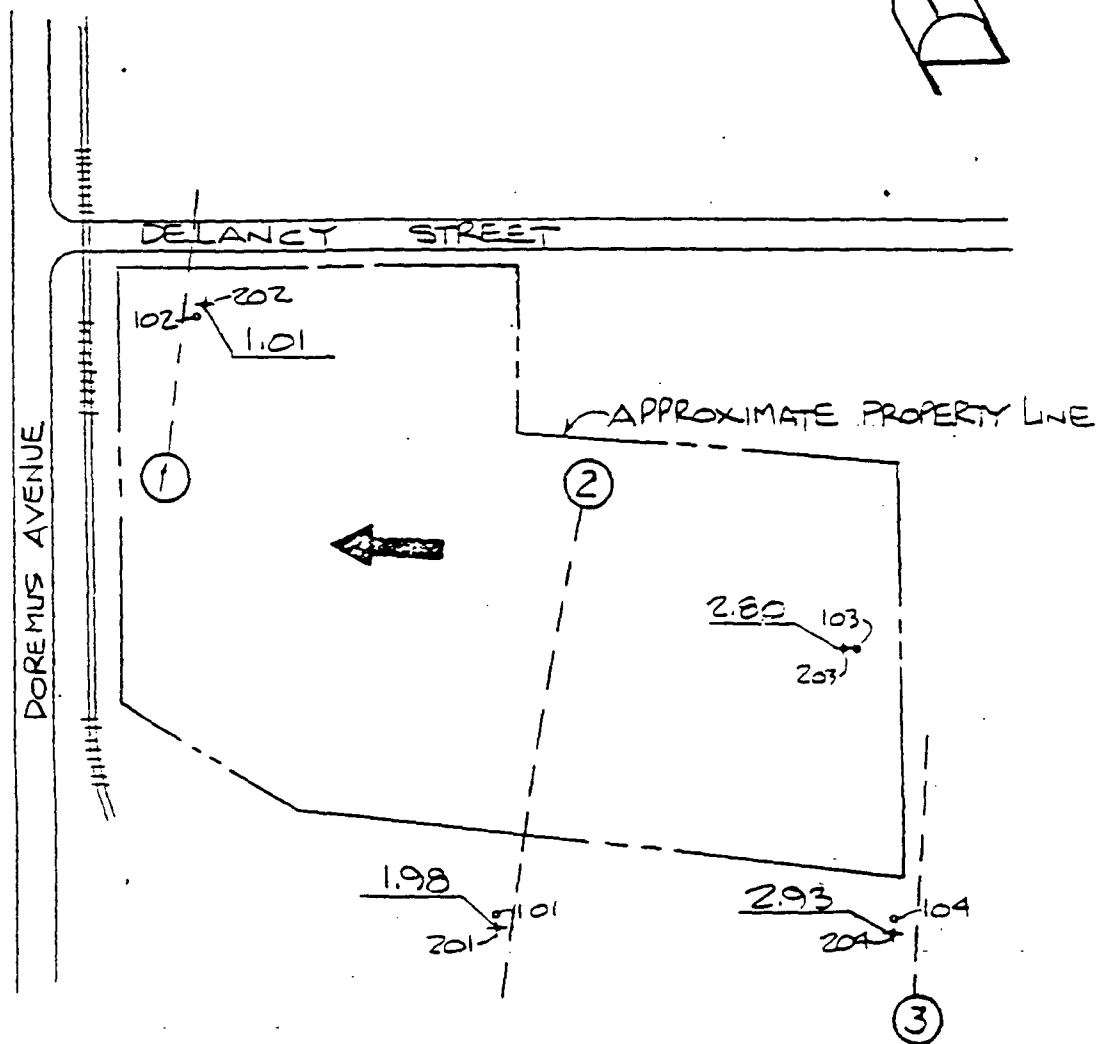
- ← DOWN GRADIENT DIRECTION
- ① CONTOUR ON POTENTIOMETRIC SURFACE

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

ENVIRONICS. INC. ENVIRONMENTAL CONSULTANTS 46 JACKSON DRIVE CRANFORD, N.J. 07016		
DRAWING TITLE	DRAWING NO.	REV.
POTENTIOMETRIC SURFACE 5/18/84	6	0



EXPLANATION

← DOWN GRADIENT DIRECTION

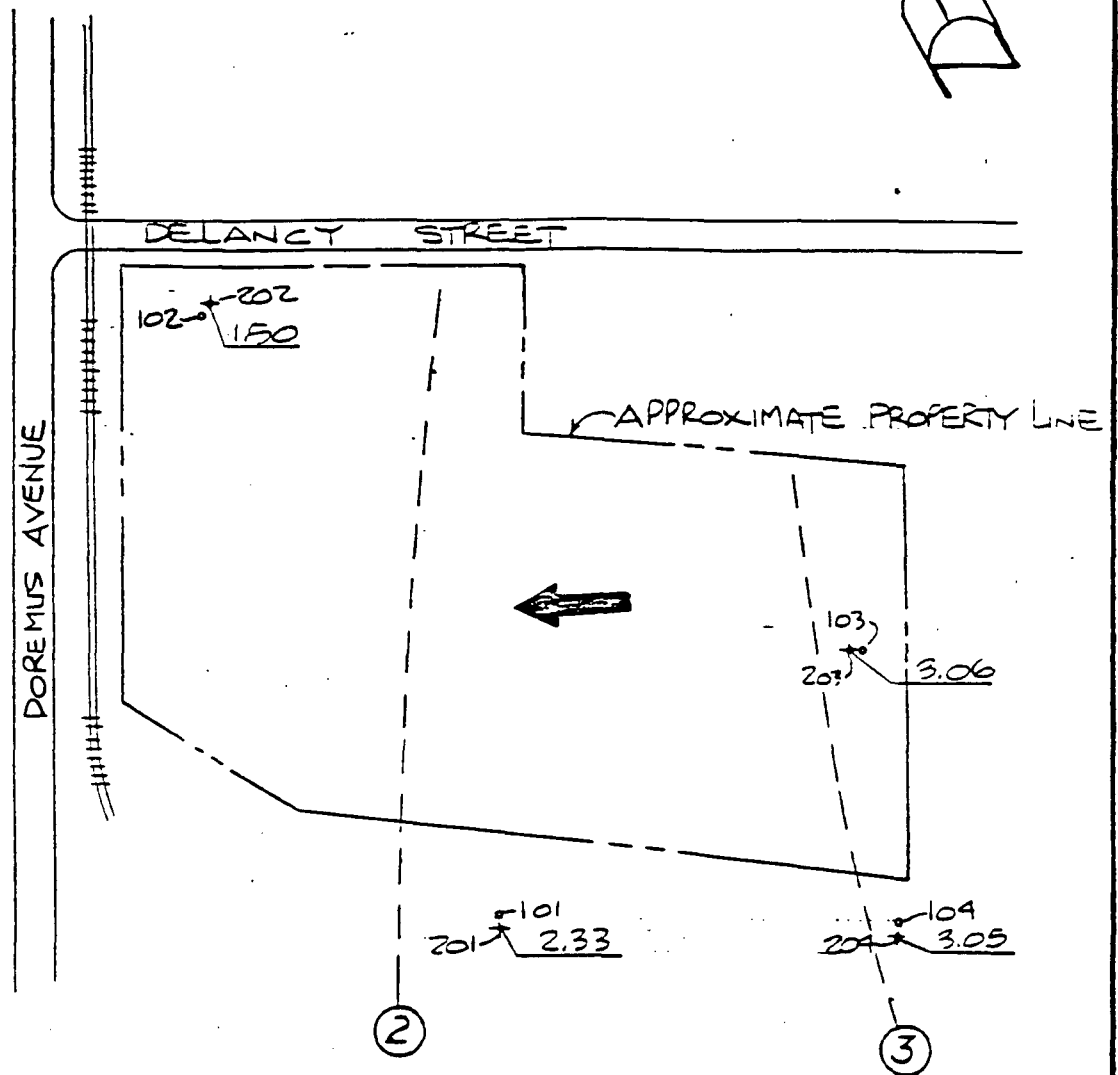
① CONTOUR ON POTENTIOMETRIC SURFACE

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

ENVIRONICS, INC. ENVIRONMENTAL CONSULTANTS 46 JACKSON DRIVE CRANFORD, N.J. 07016		
DRAWING TITLE POTENTIOMETRIC SURFACE 5/31/84	DRAWING NO. 7	REV. 0



EXPLANATION

DOWN GRADIENT DIRECTION

② --- CONTOUR ON POTENTIOMETRIC SURFACE

• DENOTES WELL SCREENED IN WATER TABLE AQUIFER

+ DENOTES WELL SCREENED IN CONFINED AQUIFER

SCALE: 1"=200'-0"

ENVIRONICS, INC. ENVIRONMENTAL CONSULTANTS 48 JACKSON DRIVE CRANFORD, N.J. 07016		
DRAWING TITLE POTENTIOMETRIC SURFACE 11/19/84	DRAWING NO. 8	REV. 0

5. INTER-SYSTEM FLOW POTENTIAL

The discussion in Sections 3 and 4 has been confined to the horizontal component of groundwater flow in each of the aquifer systems investigated. This Section will center on flow through the confining layer, in a vertical direction.

A nested pair of wells was installed at each drilling site. A nested pair of wells consists of two wells installed at the same location, screened either at different depths within one aquifer, or as in this case, in separate aquifers. The difference in water elevations in the wells of each pair indicates the vertical hydraulic gradient.

Since well 103 was destroyed, only 3 of the 4 pairs remain. However, in those pairs the data have been consistent for each measurement. These data are presented in table 2. In each case, the vertical hydraulic gradient has been downward at a magnitude between approximately 4 and 7 feet. The downward force of this elevation difference operates over the thickness of the confining layer, which as described in Section 2, varies between 8 and 14 feet. From these data, the downward gradient across the confining layer beneath the site may be calculated. This gradient varies between 0.21 and 0.875.

A reasonable estimate of the rate of downward flow through the confining layer may be calculated by using

TABLE 2
VERTICAL GRADIENT DATA

WELL PAIR	DATE		
	5/13/84	5/31/84	11/19/84
101	6.19	7.30	6.39
201	1.33 (4.86)	1.98 (5.32)	2.33 (4.06)
102	6.47	7.88	5.50
202	0.44 (6.03)	1.01 (6.87)	1.50 (4.00)
103	DESTROYED		
203	-	-	-
104	6.55	7.49	6.57
204	2.35 (4.20)	2.93 (4.56)	3.05 (3.52)

Darcy's Law, and estimating the permeability of the confining layer. Darcy's Law states that groundwater flow is proportional to the permeability, the hydraulic gradient and the cross-sectional area. Based on the lithologic description of the silty clay encountered during the drilling operations, the permeability of the confining layer is estimated to vary between 10^{-6} and 10^{-8} centimeters per second. The cross-sectional area of the site is approximately 9 acres. Total flow through the confining layer, from the shallow aquifer to the deep aquifer, in units of gallons per day, is calculated therefore, to vary between lower and upper limits of approximately 20 and 7000 respectively.

6. SUMMARY AND CONCLUSIONS

Two aquifer systems were investigated at the Central Steel Drum site, a shallow water table system and a deeper confined system. The systems are separated by a silty clay confining unit, which varies in thickness between 8 and 14 feet over the 9 acre site.

Neither the water table or the confined aquifer has the potential for exploitation as a water source.

Virtually no horizontal flow could be detected in the water table system. Flow in the confined system, at an

undetermined rate, was found to be in a northwesterly direction.

Vertical flow across the confining layer is downward. The rate of downward flow across the entire site varies between limits of 20 and 7000 gallons per day.

REFERENCE NO. 17

PRELIMINARY ASSESSMENT
OFF SITE RECONNAISSANCE
INFORMATION REPORTING FORM

Date: 4/20/89

Site Name: Adco Chemical Co.

TDD: 02-8904-14

Site Address: 49 Rutherford Street +
Street, Box, etc.

Newark
Town

Essex
County

New Jersey
State

NUS Personnel:	Name	Discipline
	<u>JOHN HARRISON</u>	<u>FIELD TECHNICIAN</u>
	<u>ED KNYFD</u>	<u>GEOLOGIST</u>

Weather Conditions (clear, cloudy, rain, snow, etc.):

55° Sunny, CLEAR

Estimated wind direction and wind speed: 5-10 mph. to South

Estimated temperature: 55°

Signature: Edmond Knyfd

Date: 4-20-89

Countersigned: [Signature]

Date: 4-20-89

PRELIMINARY ASSESSMENT
INFORMATION REPORTING FORM

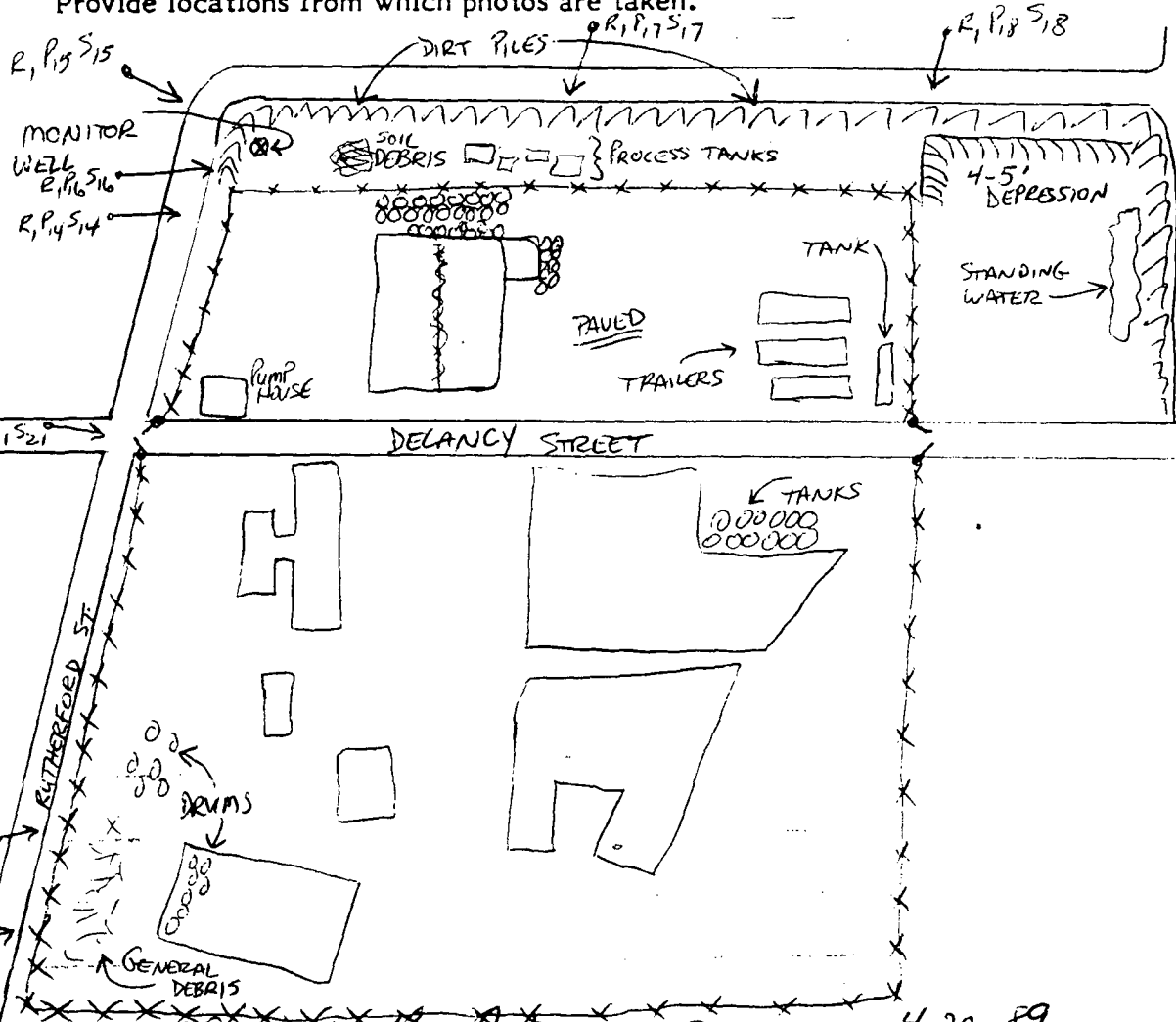
Date: 4-20-89

Site Name: ADCO CHEMICAL CO.

TDD: 02-8904-14

Site Sketch:

Indicate relative landmark locations (streets, buildings, streams, etc.).
Provide locations from which photos are taken.



Signature: [Signature]

Date: 4-20-89

Countersigned: [Signature]

Date: 4-20-89

PRELIMINARY ASSESSMENT
INFORMATION REPORTING FORM

Date: 4-20-89Site Name: Adco Chemical Co.TDD: 02-8904-14.

Notes (Periodically indicate time of entries in military time):

Arrived on site @ 0955. Facility has an eight foot high chain link fence with barbed wire. Access is through 1 main gate. Facility slope is @ less than 1%. Some stored vegetation was observed. Site is active, completely fenced. A monitor well was visible outside the fenced area - which included empty process tanks, soil piles, no trespassing signs, 2 trees and very little other vegetation. The south-southwest of facility had ^{some} drums, stored on the unpaved ground, general debris ^{and} some drums in a covered, but open storage area. (EX)

Signature: Edmund Kybel Jr.Date: 4-20-89Countersignature: [Signature]Date: 4-20-89

PRELIMINARY ASSESSMENT
INFORMATION REPORTING FORM

Date: 4-20-89

Site Name: Adco Chemical Co.

TDD: 02-8904-14.

Notes (Cont'd):

(This section contains 15 horizontal lines for handwritten notes. A dark ink smudge is visible on the 11th line from the top.)

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: Edmund Knydal P.

Date: 4-20-89

Countersignature: [Signature]

Date: 4-20-89

**PRELIMINARY ASSESSMENT
INFORMATION REPORTING FORM**

Date: 4-20-89Site Name: Adco Chemical Co.TDD: 02-8904-14.

Photolog:

Frame/Photo Number	Date	Time	Photographer	Description
<u>R₁P₁₄S₁₄</u>	<u>4-20-89</u>	<u>0952</u>	<u>JOHN HARRISON</u>	<u>waste drums on north</u> <u>side of waste house (not paved - on pallets)</u>
<u>R₁P₁₅S₁₅</u>	<u>4-20-89</u>	<u>0955</u>	<u>JOHN HARRISON</u>	<u>looking south towards monitor</u> <u>unit and drum storage</u>
<u>R₁P₁₆S₁₆</u>	<u>4-20-89</u>	<u>0957</u>	<u>JOHN HARRISON</u>	<u>empty process tanks</u>
<u>R₁P₁₇S₁₇</u>	<u>4-20-89</u>	<u>0959</u>	<u>JOHN HARRISON</u>	<u>View of facility looking</u> <u>south.</u>
<u>R₁P₁₈S₁₈</u>	<u>4-20-89</u>	<u>1005</u>	<u>JOHN HARRISON</u>	<u>View SW AT BACK of</u> <u>facility.</u>
<u>R₁P₁₉S₁₉</u>	<u>4-20-89</u>	<u>1010</u>	<u>JOHN HARRISON</u>	<u>VIEW NE ^{TO} OF FACILITY, DRUMS,</u> <u>DEBRIS UNPAVED</u>
<u>R₁P₂₀S₂₀</u>	<u>4-20-89</u>	<u>1015</u>	<u>JOHN HARRISON</u>	<u>SPRRESSED VEGETATION, DRUMS</u> <u>ON UNPAVED GROUND</u>
<u>R₁P₂₁S₂₁</u>	<u>4-20-89</u>	<u>1017</u>	<u>JOHN HARRISON</u>	<u>MAIN GATE + FACILITY LOOKIN</u> <u>NORTH-NORTHEAST</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Attach additional sheets if necessary. Provide site name, TDD number, signature, and countersignature on each.

Signature: E. Carroll Keybel R.Date: 4-20-89Countersignature: [Signature]Date: 4-20-89

REFERENCE NO. 18



United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
Mountain View Office Park
810 Bear Tavern Rd., Suite 206
W. Trenton, NJ 08628

February 21, 1986

Ms. Diane Trube
NUS Corporation
Raritan Plaza II
Fieldcrest Avenue
Edison, NJ 08837

Dear Ms. Trube:

Enclosed are retrievals from our Ground Water Site Inventory Data Base for 14 New Jersey counties as you requested. Together with the retrievals for seven (7) counties previously sent on January 14, 1986, this provides you with a complete copy of the data base for New Jersey with approximately 7,000 entries.

I trust that this information will be useful.

Sincerely,

F. L. Schaefer
Information Requests Specialist

Encl.

cc: T. V. Fusillo

FLS:nm

0565 - 6001 FILE

STORED COMPONENTS

Each of the components stored in the District File is described in this section. Most of the definitions are derived from Volume II of the WATSTORE User's Guide.

1. Unique Well Number - A six digit number of which the first two digits represent the county code and the last four digits are a consecutive number assigned to the well when the well is scheduled. The county codes and the counties they represent are:

COUNTY CODES

01 - ATLANTIC	23 - MIDDLESEX
03 - BERGEN	25 - MONMOUTH
05 - BURLINGTON	27 - MORRIS
07 - CAMDEN	29 - OCEAN
09 - CAPE MAY	31 - PASSAIC
11 - CUMBERLAND	33 - SALEM
13 - ESSEX	35 - SOMERSET
15 - GLOUCESTER	37 - SUSSEX
17 - HUDSON	39 - UNION
19 - HUNTERDON	41 - WARREN
21 - MERCER	

2. Site - ID - A 15-digit identification number assigned to the site used primarily as an internal control number within the WATSTORE computer file. Although the Site - ID is formed initially from the latitude and longitude of the site, the number is an identifier and not a locator.
3. Latitude - The best available value for the latitude of the site in degrees, minutes, and seconds.

itude - The best available value for the longitude of the site in degrees, minutes, and seconds.

5. Municipality - The name of the township in which the well is located.

6. Owner - The most current known owner of the well.

7. Local identifier - A name given to the well by the owner or U.S. Geological Survey to help distinguish between multiple wells of the same owner.

8. Date completed - The date the well was completed by the driller.

9. Use of site - A code indicating the principal use of the site. The codes and their meanings are:

A - anode

P - oil or gas well

C - standby emergency supply

R - recharge

D - drain

S - repressurize

E - geothermal

T - test

G - seismic

U - unused

H - heat reservoir

W - withdrawal of water

M - mine

X - waste disposal

O - observation

Z - destroyed

Use of water - A code indicating the principal use of water from the site. The codes and their meanings are:

1A- air conditioning	I - irrigation	R - recreation
2B- bottling	J - industrial (cooling)	S - stock
3C- commercial	K - mining	T - institution
4D- dewater	M - medicinal	U - unused
5E- power	N - industrial	Y - desalination
6F- fire	P - public supply	Z - other (explain in remarks)
7H- domestic	Q - aquaculture	

11. Altitude of land surface (feet) - The altitudes of the land surface at the site, in feet above land surface datum (NVGD of 1929).

12. Water level (feet) - The depth of the water in the well from the land surface at the time the well was constructed.

13. Date water level measured - The date on which the given water level was measured which is usually at the time the well was constructed.

14. Depth of well (feet) - The depth of the finished well in feet below land surface datum. This is not always equal to the bottom of the last opening because the well may have a plug at the bottom.

15. Production level (feet) - The water level in feet below land surface while the well was discharging usually taken during the initial pump test.

6. Discharge - The discharge from the site in gallons per minute at the time of the original pump test.

7. Principal aquifer - A code representing the principal source of water in the well. The codes and their meanings are found in Appendix A.

18. Data reliability - Primarily indicates if the well has been field checked by the New Jersey District of the U.S. Geological Survey. The codes and their meanings are:

C - the data have been field checked by the reporting agency.

U - the data have not been field checked by the reporting agency, but the reporting agency considers the data reliable.

19. Altitude measurement method - A code indicating the method used to determine the altitude of the site. The codes and their meanings are:

A - altimeter

L - level or other surveying method

M - interpolated from topographic map

Failure to select one of these values implies that the method is unknown.

20. Length of screen (feet) - The calculated difference between the bottom and top of the open section.
21. Multiple opening flag - In the instances where there are multiple screens or blanks within the screened interval the value calculated is flagged by a *. Thus, the length of screen can be greater than the top to bottom if the screens are telescoped or less if there are blanks.
22. Depth to first opening (feet) - The depth to the top of the first open section of the screen or open hole in feet below land surface.
23. Bottom last opening (feet) - The depth to the bottom of the last open section of the screen or open hole in feet below land surface.
24. Minimum screen diameter (inches) - The smallest diameter of the open section that can be filled with water.
25. End depth drillers log (feet) - The deepest point below land surface that accompanies the drillers lithologic log of the well.
26. Hydrologic unit - A cataloging unit representing the hydrologic unit in which the site is located. The hydrologic units and their boundaries are given in the map provided.

Driller - The name of the company or individual that drilled and finished the well.

28. Minimum casing diameter (inches) - The diameter of the narrowest casing segment of the well.

29. Owner date - The most current date of ownership associated with the well.

30. Site type - A code representing the type of well. The codes and their meanings are:

C - collector or Ranney type well.

D - drain dug to intercept the water table or potentiometric surface to either lower the ground-water level or serve as a water supply.

E - excavation.

H - sinkhole.

I - interconnected wells, also called connector or drainage wells; that is, a well interconnected via an underground lateral.

M - multiple wells. Use only for well field consisting of a group of wells that are pumped through a single header and for which little or no data about the individual wells are available.

O - outcrop.

P - pond dug to intercept the water table or potentiometric surface and serve as a water supply.

S - spring (used only on spring schedule.

T - tunnel, shaft, or mine from which ground water is obtained.

W - well, for single wells other than wells of the collector or Ranney.

X - test hole, not completed as a well.

31. Latitude - longitude accuracy - Indicates the accuracy to which the lat-long is measured. When it is measured from a U.S. Geological Survey topographic map the code T for ± 10 seconds is generally used. When field checked the code used is F ± 5 seconds. The codes and meanings are:

S - the measurement is accurate to ± 1 second

F - the measurement is accurate to ± 5 seconds

T - the measurement is accurate to ± 10 seconds

M - the measurement is accurate to ± 1 minute

No value indicates that the accuracy is unknown and is, therefore, assumed to be beyond one minute.

32. Accuracy of altitude - The accuracy of altitudes interpolated from the contours on topographic maps is \pm one-half the contour interval.

33. Current use of water - The codes from use of water are used, however, this code represents the current status of the well. The primary use may have changed or the well may have been destroyed.

35. Measuring point - point above land surface from which water level measurement is taken.
36. Permit number - The State Department of Environmental Protection, Division of Water Resources (NJDEP/DWR) assigns a 6-7 digit code with the first 2 digits representing the State Atlas Map on which the well is located and the remaining 4-5 digits are assigned consecutively.
37. Grid number - The 7 digit code assigned by the NJDEP/DWR representing the well location on the State Atlas Maps.
38. Water Supply number - Number assigned by the NJDEP/DWR Water Policy and Supply Council, to the diversion rights of a well.
39. Depth to bedrock - Depth in feet below land surface datum where a rock formation is first encountered.
40. Bedrock material (lithology) - The description and classification of bedrock. The codes and their meanings are given in Appendix C.
41. Standard industrial use code - A standard four-digit code representing the use of the water. The codes and their meanings are given in Appendix B.

of opening - The code indicating type of open section.

es and their meanings are:

F - fractured rock	S - screen, type not known
L - louvered or shutter-type	T - sand point
M - mesh screen	W - walled or shored
P - perforated, porous, or slotted casing	X - open hole
R - wire-wound screen	Z - other (explain in remarks)

This field is mandatory. Information about the openings will not be stored if this field is blank.

42. Type of opening material (C86/Screen-Material) - The code indicating the type of material from which the screen or other open section is made. The codes and their meanings are:

B - brass or bronze	P - PVC, fiberglass, or other plastic
C - concrete	R - stainless steel
G - galvanized iron	S - steel
I - wrought iron	T - tile
M - other metal	Z - other (explain in remarks)

43. Type of lift - The type of lift or pump used to bring water to the surface. The codes and meanings are:

A - air list	R - rotary pump
B - bucket	S - submergible pump
C - centrifugal pump	T - turbine pump
J - jet pump	U - unknown
P - piston pump	Z - other (explain in remarks)

4. Municipality code - A list of municipalities and codes published by the New Jersey Department of Transportation. The code are assigned 2-digit numbers to the alphabetical listing of municipalities within each county. (Appendix D.)

COMPUTED VALUES

Values stored in the GWSIDB.DAT file can be used to compute other components using DATATRIEVE. These components do not occupy space in the GWSIDB.DAT file and are derived only when you use them in a DATATRIEVE statement.

1. Altitude of water level (feet) - A value calculated by the computer by subtracting the water level from the altitude of the land surface.
2. Drawdown (feet) - The difference between the production level and the water level.
3. Specific capacity - The discharge expressed as a rate of yield per unit drawdown reported in units of gallons per minute per feet. If the value is followed by a μ , the date of the water level measurement is different than the date of construction by two years or greater or one of the dates is blank. This gives an indication of the reliability of the specific capacity measurement to the initial conditions at the time the well was drilled.

130000	4044560 74180301	404456 741803	ESSEX FELS BCR0	ESSEX FELS WD	EFWD 1A	09/01/1927 W	F	F	S
130001	4044560 74220501	404456 742205	LIVINGSTON TWP	ESSEX FELS WD	EFWD 8	02/26/1942 W	F	P	S
130003	4044560 74220501	404456 742205	LIVINGSTON TWP	EAST ORANGE WD	DICKINSON 3	/ / W	F	P	S
130004	4044560 74220501	404456 742205	LIVINGSTON TWP	EAST ORANGE WD	SLOUGH BROOK 3	01/01/1927 W	F	P	S
130005	4044560 74220501	404456 742205	LIVINGSTON TWP	EAST ORANGE WD	DICKINSON 1	/ / W	F	P	S
130006	4047080 74191301	404708 741913	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD 4	09/23/1955 W	R	R	S
130007	4048370 74204801	404837 742048	LIVINGSTON TWP	LIVINGSTON TWP WD	LWD 5	01/01/1960 W	F	F	F
130008	4044270 74222201	404427 742222	MILLBURN TWP	COMMONWEALTH WC	CWC 50	01/01/1955 W	F	P	S
130009	4044360 74222201	404430 742222	MILLBURN TWP	COMMONWEALTH WC	CWC 51	/ / W	F	P	S
130010	4044320 74211101	404432 742111	MILLBURN TWP	COMMONWEALTH WC	CWC 46	01/01/1954 W	F	P	S
130011	4044390 74211101	404439 742111	MILLBURN TWP	COMMONWEALTH WC	CWC E	01/17/1947 W	F	P	S
130012	4044500 74211101	404450 742111	MILLBURN TWP	COMMONWEALTH WC	CWC K5	01/01/1932 W	F	P	S
130013	4044520 74211101	404452 742111	MILLBURN TWP	COMMONWEALTH WC	CANOE BROOK 30	01/01/1925 O	U	U	S
130014	4044540 74202101	404454 742021	MILLBURN TWP	EAST ORANGE WD	NEUTRAL ZONE	01/01/1925 O	U	U	S
130015	4045190 74200101	404519 742001	MILLBURN TWP	EAST ORANGE WD	CANCE BROOK 2	03/05/1958 W	P	P	S
* 130016	4043530 74080001	404353 740800	NEWARK CITY	ARLON FINISHES	ARLON 1	01/01/1960 W	N	N	S
130017	4044010 74083401	404401 740834	NEWARK CITY	BALLANTINE, P	8	01/01/1937 O	U	U	S
130018	4044290 74160401	404429 741604	SOUTH ORANGE VILL	SOUTH ORANGE WD	SOWD 3A	04/01/1950 W	P	P	S
130019	4048360 74203401	404835 742034	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD 3	07/05/1955 W	F	P	T
130020	4047550 74213001	404755 742130	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 11	05/21/1965 T	U	U	T
130021	4047420 74205001	404742 742050	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW	03/00/1964 Z	U	U	T
130022	4047380 74204201	404741 742048	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD 6	05/06/1966 W	P	P	T
130023	4047550 74200701	404755 742007	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 5	05/12/1964 Z	U	U	T
130024	4047430 74203501	404743 742035	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 8	10/02/1964 Z	U	U	T
130025	4047420 74203501	404742 742035	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 9	10/20/1964 Z	U	U	T
130026	4047430 74203502	404743 742035	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 13	05/20/1965 T	U	U	T
130027	4047430 74203503	404743 742035	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 12	04/30/1965 Z	U	U	T
130028	4047420 74203502	404742 742035	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW	06/00/1965 T	U	U	T
130029	4047140 74211301	404714 742113	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 15	09/24/1965 Z	U	U	T
130030	4047130 74210301	404713 742103	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 17	05/21/1966 Z	U	U	T
130031	4047110 74205001	404711 742050	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 16	03/14/1966 Z	U	U	T
130032	4047200 74201801	404720 742018	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW 10	02/14/1965 T	U	U	T
130037	4046540 74184601	404654 741846	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD TW	01/24/1964 T	U	U	T
130038	4046400 74194901	404634 741953	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD 12	10/30/1978 W	F	P	T
130039	4046070 74193701	404607 741937	LIVINGSTON TWP	LIVINGSTON TWP WD	LTWD E HOBART	02/00/1964 T	U	U	T
130040	4045560 74181301	404556 741813	LIVINGSTON TWP	ST BARNABAS MED CEN	1	04/27/1961 U	U	U	T
130041	4044530 74202201	404450 741946	LIVINGSTON TWP	EAST ORANGE WD	CANOE BROOK 3	08/00/1930 W	P	P	F
130042	4045540 74193401	404554 741934	LIVINGSTON TWP	EAST ORANGE WD	CANOE BROOK 4	05/28/1958 W	F	P	F
130043	4046090 74192101	404609 741921	LIVINGSTON TWP	EAST ORANGE WD	CANOE BROOK 5	08/02/1972 W	P	P	F
130044	4046070 74190601	404607 741906	LIVINGSTON TWP	EAST ORANGE WD	CANOE BRK TW 6	09/01/1972 T	U	U	F
130045	4045340 74204801	404534 742048	LIVINGSTON TWP	EAST ORANGE WD	SLOUGH BROOK 2	00/00/1927 W	F	P	F
130046	4045270 74205801	404527 742058	MILLBURN TWP	EAST ORANGE WD	SLOUGH BROOK 1	00/00/1927 W	F	P	F
130047	4045000 74201001	404500 742010	MILLBURN TWP	EAST ORANGE WD	CANOE BROOK 1	00/00/1930 W	P	P	F

* Closest well to site.

REFERENCE NO. 19

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
CHARLES R. ERDMAN, JR., COMMISSIONER
DIVISION OF WATER POLICY AND SUPPLY
HOWARD T. CRITCHLOW, DIRECTOR AND CHIEF ENGINEER

SPECIAL REPORT 10

PRELIMINARY REPORT
ON THE
GEOLOGY AND GROUND-WATER SUPPLY OF THE
NEWARK, NEW JERSEY, AREA

By
Henry Hesper
and
Henry C. Burksdale

1951

Prepared in cooperation with the
United States Department of the Interior
Geological Survey

LETTER OF TRANSMITTAL

Honorable Charles R. Erdman, Jr., Commissioner
Dept. of Conservation & Economic Development

Dear Sir:

I am transmitting herewith a report on the ground-water supplies of the Newark, New Jersey, area prepared by Henry Herpers of the State Geologic & Topographic Survey, and Henry C. Barksdale, District Engineer of the United States Geological Survey. This report has been prepared in cooperation with the United States Geological Survey as a part of the cooperative investigation of the ground water resources of the State.

The report describes the geology and ground-water conditions in the City of Newark and its vicinity. It defines the limits of a gravel-filled preglacial channel, the existence of which has only been inferred heretofore. It describes the critical lowering of the water levels in the eastern part of Newark, and the rather general intrusion of salt water into the water-bearing formations in that area. The report points out that the safe yield of the water-bearing formations in parts of the area may have been exceeded, and that further large developments in other parts of the area should be made with great caution, if at all.

I, therefore, recommend that this report be published as a Special Report of the Division of Water Policy & Supply, in order that the information contained therein may be made available to the people of the State.

Respectfully submitted,

H. T. CRITCHLOW
Director & Chief Engineer

Encl.

October 23, 1951

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET, TRENTON 9, N. J.

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PRELIMINARY REPORT ON THE GEOLOGY AND GROUND-
WATER SUPPLY OF THE NEWARK, NEW JERSEY, AREA

By Henry Herpers and Henry C. Barksdale

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ABSTRACT

In the Newark area, ground water is used chiefly for industrial cooling, air-conditioning, general processing, and for sanitary purposes. A small amount is used in the manufacture of beverages. Total ground-water pumpage in Newark is estimated at not less than 20,000,000 gallons daily.

The Newark area is underlain by formations of Recent, Pleistocene and Triassic age, and the geology and hydrologic properties of these formations are discussed. Attention is called to the important influence of a buried valley in the rock floor beneath the Newark area on the yield of wells located within it. Data on the fluctuation of the water levels and the variation in pumpage are presented, and their significance discussed. The results of a pumping test made during the investigation were inconclusive. The beneficial results of artificially recharging the aquifers in one part of the area are described.

The intrusion of salt water into certain parts of the ground-water body is described and graphically portrayed by a map showing the chloride concentration of the ground water in various parts of the City. Insofar as available data permit, the chemical quality of the ground water is discussed and records are given of the ground-water temperatures in various parts of the City.

There has been marked lowering of the water table in the eastern part of the area, accompanied by salt water intrusion, indicating that the safe yield of the formations in this part of Newark has probably been exceeded. It is recommended that the study of the ground-water resources of this area be continued, and that artificial recharging of the aquifers be increased over as wide an area as possible.

INTRODUCTION

Purpose and scope of investigation

In the Newark area, the chief uses of ground water are for cooling by industries, for air-conditioning, and for general processing and sanitary purposes. Several beverage manufacturers use ground water as an ingredient in their products, and the water from a few wells is used for drinking. As one result of a recently completed survey of all known wells, it is estimated that not less than 20 million gallons of ground water is used in this area per day. In summer an estimated one to one and a half million gallons of ground water is used for air-conditioning alone.

Records kept by various well owners and by State and Federal agencies have shown a marked lowering of the water level in many Newark wells, as well as a diminution in the yield of some. They have also shown that the ground water in certain parts of the area has become brackish because of heavy pumpage and the infiltration of salt water from surface sources. These conditions are particularly severe in the eastern part of Newark, in what is known locally as the "Ironbound District." In order to give some conception of the seriousness of these conditions, it may be mentioned that in the year 1879 the water level in wells in eastern Newark ranged from a few feet above to 25 feet below the surface of the ground, and several 8-inch wells yielded as much as 500 gallons per minute when pumped by direct suction. Analyses of the water from these wells showed that it contained only 10 to 25 parts per million of chloride.

Analyses made by the City Chemist of Newark showed chloride contents ranging from 250 to 2,500 parts per million in water taken from wells in 1942, in this same area. Moreover, in 1947 the general water level ranged from 125 to 200 feet beneath the land surface, and pumping levels in wells ranged from 135 to 290 feet, depending upon the amount of water pumped and the season of the year. In view of these facts, it was decided to make an intensive study of the geology and ground water of the Newark area, and to publish a report on the findings, in order to summarize and make generally available our knowledge of the quantity and quality of ground-water resources of the area, and to facilitate the planning of ground-water pumpage in the future.

The area included in the present study and referred to herein as the Newark area is shown on figure 1. It lies principally in Essex County, but includes small parts of Hudson and Union Counties. It includes all of the city of Newark, except the extreme western part; the greater part of Harrison; and parts of Kearny, Irvington, East Orange, Bloomfield, and Elizabeth.

The Newark area lies wholly within the physiographic province known as the Piedmont Plain. The southeastern part of the area is a lowland with considerable tidal marsh, and the balance of the area is characterized chiefly by low ridges trending in a northeasterly direction. The average annual rainfall at Newark is approximately 47 inches, and the mean annual temperature is about 53°F.



Figure 1.-Map of northeastern New Jersey, showing location of the Newark area.

Acknowledgments

This report is the result of cooperative work by the Geologic and Topographic Survey and the Division of Water Policy and Supply, both of the New Jersey Department of Conservation and Economic Development, and by the United States Geological Survey. M. E. Johnson, State Geologist, H. T. Critchlow, Director of the Division of Water Policy and Supply, and A. N. Sayre, Geologist in Charge, Ground Water Branch, U. S. Geological Survey, have exercised general supervision over the work since its beginning. Mr. Johnson and Henry C. Burksdale, District Engineer of the Ground Water Branch, U. S. Geological Survey, have shared local responsibility for the progress and details of the work. The gathering of the data necessary for the preparation of this report has been largely in the hands of Henry Herpers of the Geologic and Topographic Survey and Jerome M. Ludlow of the U. S. Geological Survey. The greater part of this report was written by Mr. Herpers. The sections on the hydrology of the various formations were written by Mr. Burksdale.

Needing the help of the citizens and industries of Newark, and believing that they would gladly cooperate if they knew the facts, the Newark Chamber of Commerce was advised of the proposed survey and report, and a story giving the reasons for the work and indicating its importance was given the press early 1917. It is now the authors' pleasure to express their sincere appreciation of the help given the project by almost everyone approached. The work of gathering data was materially facilitated by the assistance of the following well contractors: Artesian Well and Equipment Co., C. W. Lauman & Co., Layne-New York Co., Parkhurst Well and Pump Co., Rinbrand Well Drilling Co., Samuel Stothoff Co., and William Stothoff Co. Especially valuable data on the operating characteristics of their wells, and other aid, were freely given by Mr. B. H. Bishop and other engineering personnel of P. Ballantine & Sons and by Mr. Wm. E. Helmstaedter, Mechanical Engineer, and others of the Celanese Corporation of America. Particular acknowledgment is made of the assistance

rendered by P. Ballantine & Sons in making their well field available for pumping tests and altering their plant routine to meet the requirements of the test. The Division of Water and the Department of Health of the City of Newark have assisted materially in locating wells and in furnishing records of analyses of well water.

OUTLINE OF GEOLOGY

The Newark area lies wholly within the section of New Jersey underlain by the Newark group of rocks of Triassic age. These rocks form a belt extending from the Hudson River across central New Jersey, Pennsylvania, and Maryland, and into Virginia. They consist of shale, sandstone, argillite, and conglomerate with included sheets, sills, and dikes of trap rock (basalt and diabase).

In New Jersey, the sedimentary rocks of the Newark group have been divided on the basis of their lithology into three units. The lowest is chiefly red, buff, or gray arkosic sandstone and is called the Stockton formation; the middle unit, called the Lockatong formation, is composed largely of gray, purplish-gray, or dull-red argillite; and the uppermost unit, the Brunswick formation, consists chiefly of soft red shale and red sandstone. The Brunswick formation is the bedrock throughout the Newark area. In general, the strata have been tilted northwestward and locally they have been warped into gentle flexures with occasional faulting. The harder beds form ridges, most of which trend north-eastward.

The northern part of the belt of Triassic rocks was glaciated in late geologic time, so that much of the surface is covered with a mantle of glacial drift, which in many places is thick enough to conceal the bedrock surface. Although the bedrock crops out in only a few places, it accounts for the relief in the western part of the Newark area. There the covering of glacial drift is thin. In the eastern section the bedrock is concealed by thick deposits of silt and clay with

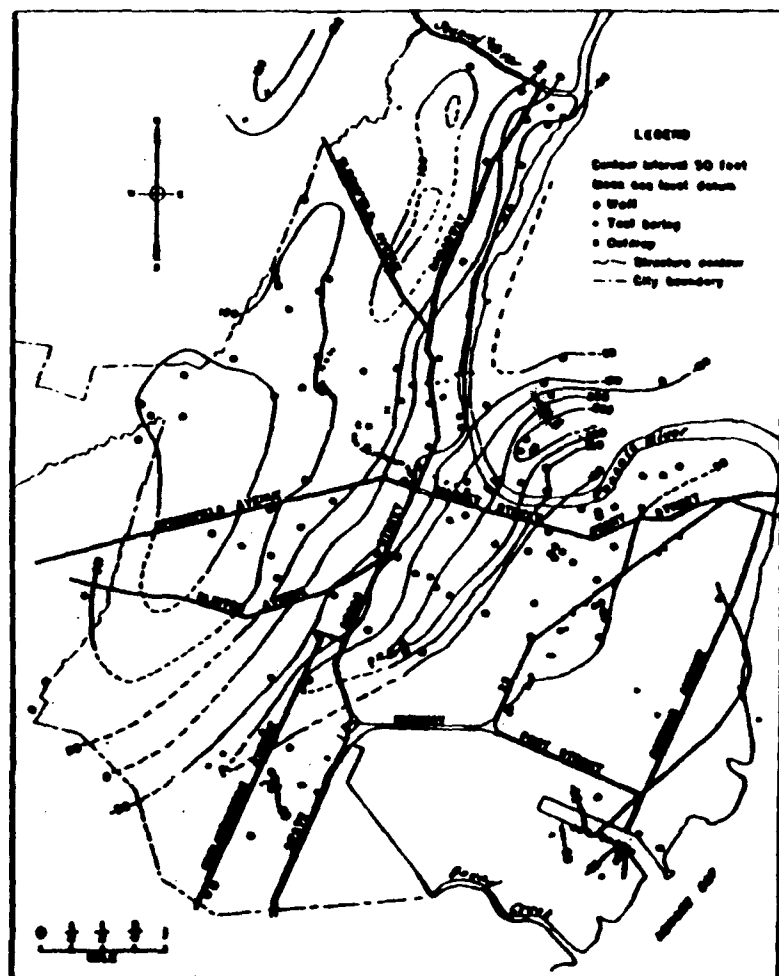


Figure 2.-Map showing elevation and configuration of bedrock beneath Newark, N. J., and vicinity.

thinner beds of sand and gravel, and, although topographically this region is a plain, borings have shown that the surface of the underlying bedrock does not conform with the ground surface. (See figure 2). The valleys of many of the streams in the glaciated area contain terraces of sand and gravel of glacial origin.

The geologic history of the area since the beginning of Triassic time is relatively simple. During Triassic time, sands and muds were deposited in an arid basin. Near the end of Triassic time the beds were faulted and tilted toward the northwest. Later erosion reduced the surface to a plain, over which the sea then advanced an indeterminate distance to the northwest. Sands and clays, such as those found in the coastal plain, were deposited in this sea. Still later, the sea withdrew and the forces of erosion removed the sediments of the coastal plain and then etched out the larger topographic features that we see today. During the Pleistocene epoch the details of the topography were altered by the ice. Hills were smoothed somewhat and much drift was deposited. The drift in some places filled valleys existing prior to glaciation and effected important changes in drainage. A general rise of sea level at the close of the Pleistocene epoch flooded low areas adjacent to the coast, forming Newark Bay at the junction of the Hackensack and Passaic Rivers. Since then the meadows have been formed by stream deposits, and very, very recently -- in terms of the geologic calendar -- much meadowland has been reclaimed by suitable drainage and by filling. A typical example of such "made" land is the area upon which Newark Airport has been built.

The succession of formations in the Newark area, arranged in normal sequence (i.e., youngest formation at top) is shown in the following table:

HYDROLOGY AND GEOLOGY OF THE ROCK FORMATIONS

Table 1. --Stratigraphic table in the Newark area

Cenozoic era	
Quaternary system	
Recent series	
Alluvium and meadow muck	
Pleistocene series	
Glacial till and stratified deposits of glacial origin	
	UNCONFORMITY
Mesozoic era	
Triassic system	
Newark group	
Brunswick formation	
	UNCONFORMITY
Older rocks	

²The deepest well drilled in Newark failed to pass through the red shale and sandstone at 2,538 feet. It cannot, therefore, be stated with certainty what sort of rock lies below the city at great depths. From the general geology of the Triassic rocks, presumably the Palisade diabase would be found at great depth, and more rocks of the Newark group below the diabase. Below the Triassic rocks lie crystalline rocks of very great age which extend to an undetermined depth.

Recent deposits

Recent deposits are found mainly in the eastern part of the Newark area where they occur in the tidal marshes or meadow lands along Passaic River and bordering Newark Bay. They consist largely of unconsolidated mud and silt with inclusions of peat and other organic materials and occasional lenses of sand and gravel. They have been deposited on top of the Pleistocene sediments, or perhaps in places directly on the Triassic rocks, by the Passaic and Hackensack Rivers and by smaller streams flowing across the area and discharging into those rivers, or into Newark Bay. The Recent deposits range in thickness from a feather edge to 35 feet.

Hydrologically, the Recent deposits are of relatively little importance except as they may transmit water to the underlying rocks or exclude it from them. Their permeability is relatively low and they occur in the parts of the area that are exposed to salt water. Therefore their action as a barrier in retarding the percolation of salt water into the underlying rocks is perhaps their most important function. In this respect they perform imperfectly because there probably are breaks in the cover that they provide at critical points, such as the ship channels in the river and in the bay.

Pleistocene deposits

The Pleistocene deposits in the Newark area are all of glacial origin. They consist of till--an unconsolidated, unstratified, heterogeneous mixture of clay, boulders, and sand--and stratified glacial drift, which is composed of sand and gravel that have been more or less sorted and stratified by the action of glacial waters. The deposits of glacial origin overlie the bedrock throughout practically all the Newark area, the bedrock cropping out only in a few more or less isolated spots. The thickness of the Pleistocene deposits varies greatly. In the western part of the area they are only a few feet thick, forming a thin veneer over the underlying bedrock, but in the eastern part of the area they

are so thick that they mask entirely the topography of the underlying rock. The map of the elevation and configuration of the bedrock beneath Newark, N. J., and vicinity (figure 2) shows that, in the area east of Broad Street, there is a large deep valley cut in the bedrock, which is entirely covered by glacial drift. At the surface this area presents the aspect of a plain. The depth to rock in the buried valley ranges from 125 feet to more than 190 feet in Newark, and to as much as 300 feet in Harrison. Farther east in the Newark area, bedrock lies at lesser depths. The buried valley extends northeastward across the city from its southwestern boundary, crossing Frelinghuysen Avenue near its northern end, and then extends east of and roughly parallel to Broad Street, finally crossing over into Harrison, where it bends eastward. It has not yet become possible to show the extension of the valley to the southwest or to the east because of the lack of sufficient reliable boring data, but its course and shape across the city of Newark is fairly accurately known. From its shape as shown on plate 1, it is apparent that the valley slopes toward the northeast, and this direction is therefore the probable direction of flow of the river that cut the valley prior to the Pleistocene epoch.

The character of the Pleistocene deposits varies throughout the Newark area. In general, these deposits consist chiefly of till in that part of the area lying west of Broad Street, whereas the cuttings taken from many test borings and wells in the eastern part of the area show that the Pleistocene deposits there consist largely of stratified materials with interbedded lenses of till. (See logs 1 to 4 in appendix.)

The Pleistocene deposits in the bottom of the buried valley are worthy of special attention. In the southwestern part of the Newark area they consist for the most part of fine sand and clayey sand, but in the northeastern part the bottom of the valley contains deposits of coarse sand and gravel which in many places contain much water. (See logs 1 and 2 in appendix.) In fact, some of the best wells in the Newark area pump from these deposits.

Other coarse deposits of glacial origin are found in the valley of the Passaic River north of the point where

the river makes its great eastward bend.

The Pleistocene deposits are one of the two major aquifers in the area. Their hydrologic function is twofold. In the first place, under favorable circumstances they yield water in substantial quantities directly to wells. In the second place, they absorb and store water from precipitation and from surface sources and transmit it to the underlying rocks.

Where the deposits contain beds of sand and gravel that are thick enough and extensive enough, they yield large quantities of water to wells finished in them. Insofar as is known, these conditions are limited almost entirely to the buried valley, where several wells yielding from 175 to more than 600 gallons per minute have been developed. For example, a well drilled for the Driver Harris Co. in Harrison near the locality where the buried valley crosses the Passaic River yielded 600 g.p.m. with a draw down of approximately 60 feet.

Detailed and extended records of water levels in and of pumpage from wells in this aquifer are not available. It is therefore impossible to say at this time whether water is being withdrawn from this aquifer at a rate less than, equal to, or greater than the rate at which recharge is available. The fact that two or three million gallons of water have been withdrawn daily for a number of years from the sand and gravel in the buried valley suggests that a large quantity of recharge occurs. On the other hand, the fact that the static water levels in some wells tapping this aquifer are now substantially below sea level suggests caution before further developments are made.

A more definite and immediate threat to the safe yield of the gravels of Pleistocene age is the apparent intrusion of salt water from surface sources. Wells near the point where the buried valley crosses the Passaic River are yielding water that contains 200 to 500 parts per million of chloride and is already unsuitable for some uses. Inasmuch as there is hydraulic continuity between the gravels and the underlying rocks, the problem of salt-water intrusion will be discussed in more detail in a section of this report that deals primarily with the water supply from the rocks.

The second function of the Pleistocene deposits, that of absorbing, storing, and transmitting water to the underlying rocks, is, in the aggregate, more important than their yielding water directly to wells. As already indicated, they overlie the rocks to varying thicknesses throughout most of the area. In general, there appears to be some correlation between the thickness and nature of the Pleistocene deposits and the yield of wells tapping the underlying rocks. This is to be expected because the storage capacity of the rocks is relatively low and sustained large yields can be obtained from them only if some adequate source of recharge is available. Where the overlying deposits are thick and moderately porous and permeable, they supply the necessary recharge. On the other hand, where they are thin or relatively impermeable, they may fail to supply recharge to the rocks or may even retard the movement of water into them.

Newark group

Brunswick formation

Geology

As mentioned previously in the outline of the geology of the Newark area, the sedimentary rocks of the Newark group of Triassic age in New Jersey have been divided upon the basis of their lithology into three units--the lower, or Stockton formation, the middle, or Lockatong formation, and the upper, or Brunswick formation. It should now be pointed out that whereas these lithologic distinctions can be made in central New Jersey, they are not apparent in the northern part of the belt of Triassic rocks. The Lockatong formation does not continue farther northeastward than Franklin Park, Middlesex County, and the distinction between the Stockton and Brunswick formations is no longer obvious, as it is farther southwestward, because the whole Newark group becomes, in general, coarser-grained. In the northern part of the State, particularly in Bergen County, these sediments become predominantly sandy and even conglomeratic. In the Newark area, the tendency of the rocks to increase in coarseness toward the northeast is shown by the fact that wells drilled in the southern part,

near the Elizabeth line, have penetrated rock that is chiefly soft red shale, whereas in north Newark, especially near the Belleville line, the rocks are principally sandstone with interbedded shale. In fact, during the latter part of the last century several sandstone quarries were operated in north Newark, especially along Bloomfield Avenue and in the southern part of Branch Brook Park. The change from soft shale to hard sandstone is reflected in the change in topography from a rather flat, low-lying plain with few rock hills in southern Newark to hills with rather pronounced relief in the northern part of the city. In the Newark area, therefore, the bedrock is all designated as Brunswick formation. A representative section showing the variations in the rock under Newark is shown in log 3. (See appendix 1.)

The bedrock originated as sand, silt, and mud which were derived from the erosion of older rocks, northwest and southeast of the great basin in which the sediments were laid down during the Triassic period. Three times during the period of deposition great sheets of basaltic lava were poured out on the surface and were then buried by sediments later in the Triassic. The remnants of the flows now form the Watchung Mountains, but it is impossible to state whether or not the flows ever extended as far east as the Newark area, for there are no igneous rocks of this type in that area, so far as is known. Toward the end of the Triassic period, the sediments were intruded by similar magma which apparently did not have enough force to push through to the surface but spread out beneath the surface in a great sill some 900 feet or more thick, usually following the bedding planes of the sediments but frequently cutting across them. Because of erosion, the sill is exposed today in the Palisades in eastern Hudson and Bergen Counties and also in certain mountains in central New Jersey. At the close of Triassic time, the entire Newark group of rocks were tilted toward the northwest, which is their attitude today and in the process they were faulted and greatly fractured.

The total thickness of the rocks of Triassic age in the Newark area is unknown but is estimated at about 6,000 to 7,000 feet.

The deepest well drilled in Newark reached a depth of 2,539 feet and failed to pass through the normal red shales and sandstones. It is therefore impossible to state with accuracy what lies below that depth, but presumably a well drilled to great depth in Newark would eventually strike the Palisade diabase, and below that would strike more sedimentary rocks of Triassic age before entering the crystalline basement rocks upon which the Triassic sediments were deposited.

Hydrology

GENERAL. --

The Brunswick formation yields water primarily and almost exclusively from the cracks in the rocks of which it is composed. The primary pore spaces in the rocks are generally so small that water moves through them very slowly, if at all, under the hydraulic gradients that are established by pumping. Were it not for the fact that the formation has been extensively cracked and fractured, and has thus acquired a kind of secondary permeability, it would yield very little water.

There is in the Brunswick formation a kind of modified water-table condition wherein the water is generally free to move in any direction and seek the level determined by the factors affecting recharge and discharge. The various systems of cracks intersect so that water can move more or less freely in all directions. However, the cracks are not of uniform size and capacity in all directions, and water is likely to move more freely in some directions than in others. For the area as a whole, there may be no one direction that is generally more favorable to flow than others. It probably differs from place to place.

The capacity of the formation to store and transmit water decreases with depth. As greater depths are reached, the weight of the overlying materials increases and tends to close the cracks. Thus less and less space is available to store water and the resistance to its movement is increased. It is probable that the cracks that are horizontal, or nearly so, are first affected

and most affected in this way. The horizontal cracks tend to distribute water uniformly in all directions, so that the tendency of the water to flow in the direction of the prevailing vertical cracks is probably accentuated with depth. The cracks along the bedding planes, which appear to be very numerous near the surface and are more nearly horizontal than vertical, probably are less and less important with depth.

There is, therefore, little foundation for the common belief that water is transmitted for long distances underground through the Brunswick formation, particularly along the bedding planes of the rocks. It is unlikely that the bedding planes, or rather the horizontal cracks along them, provide the path of least resistance to the flow of water. Actually, water probably flows through the formation most readily in vertical or nearly vertical cracks. Except along major faults, individual vertical cracks are not likely to extend very far without interruption, and are not likely to transmit water for distances greater than 2 or 3 miles. Furthermore, as the vertical cracks necessarily intersect the rock surface locally, they will receive recharge or discharge water locally depending upon the hydraulic gradient.

Certain characteristics of individual wells in the area may be better understood in the light of the foregoing general description of the rocks from which they draw their water. The yield of a well tapping the Brunswick formation depends primarily upon the number and size of the cracks that it encounters below the water table, or more specifically upon their capacity to transmit water. Thus, two adjacent wells may pass through almost identical layers of rock, and one may yield a substantial quantity of water whereas the other may yield very little, depending upon the character of the cracks encountered in each. It is therefore impossible to predict the yield of a proposed well except in general terms based upon the average yield of other wells in the vicinity. Furthermore, all predictions of yield of wells in the Brunswick formation should be qualified by a statement that the final proof must be the actual yield of the finished well, because the number and capacity of the cracks encountered cannot be determined in advance.

There is usually little or nothing to be gained by deepening an unsuccessful well below the average depth of the productive wells in the area, because the cracks become smaller and probably less numerous with increased depth. It is almost always wiser to move to another site, even if only a short distance away, and to drill another well, rather than to double the depth of a poor well in the hope of improving its yield. It is obviously impossible to determine the nature and pattern of the deeply buried cracks at any site from observations at the surface. There are, of course, rare exceptions to this general rule, but it holds well enough to make its observance sound economic policy. For example, it has already been mentioned that one well in Newark was drilled to a depth of more than 2,500 feet. That well, though very expensive, was unproductive.

As a general rule, in the Brunswick formation most of the productive cracks occur within the first 200 or 300 feet of the rock. In some parts of the Newark area, however, most of the productive wells penetrate the rock 400 or even 500 feet. Sufficient data are not available to indicate whether the rock there is unusually productive at great depths or whether many of these wells are unnecessarily deep, because most of them were not tested before they had been drilled to their full depth. It is possible that the bottom parts of many of these holes are not very productive.

An interesting though probably extreme example of a well that was unproductive at depth is one about 800 feet deep that was observed in the course of the studies preceding this report. When the regional water level declined, the yield of this well dropped sharply. With the thought that some of the productive cracks might have been clogged either in the drilling or subsequently, the owner employed a driller to clean out and redevelop the well. A thorough job was done and it is unlikely that there remained any cracks that were sealed with mud or otherwise clogged. Nevertheless, the yield of the well did not improve substantially. It was therefore abandoned and made available as an observation well. During the spring and early summer of 1947 the water level in the well declined normally to a level of 161 feet below mean sea level, where it stopped abruptly. While the water levels in other

observation wells in the vicinity continued to decline to about 230 feet below mean sea level and the pumping levels in some adjacent wells were still lower, the water level in this well remained at 161 feet. In the late fall and winter, after the regional water level had recovered to 161 feet, this well again became responsive to variation in pumpage and fluctuated normally. The same performance was repeated in the summer of 1948 and again took place in 1949. Apparently the only explanation for the peculiar behavior of the water level is that no cracks were encountered below 161 feet and that therefore the well is water-tight at greater depths. This is, no doubt, an unusual case, but it does serve to emphasize the dependence of the yield of rock wells upon cracks, as well as the relative unimportance of horizontal cracks at depth and the decreased chance of hitting good cracks at increased depth.

The character of the Brunswick formation as an aquifer also explains another peculiarity of the wells that tap it. Ordinarily, in a relatively uniform aquifer, the interference between two or more wells is dependent mainly upon the distance between them. In the Brunswick formation, as in similar aquifers, a pumping well often affects the water level in a second well substantially more than that in a third well at the same distance but in a different direction. The explanation of this peculiarity, of course, lies in the fact that the different systems of cracks differ in their capacity to transmit water.

The Brunswick formation does not yield water as freely as some of the other important water-bearing formations in the State, especially those that yield water from the pore spaces in well-sorted medium-to coarse-grained sand and gravel. This is due primarily to the fact that its capacity to store and transmit water is smaller. The deficiency is most marked in regard to its capacity to store water. The specific yield (the storage capacity expressed as a percentage of the volume of the aquifer) of a coarse, well-sorted sand is frequently as much as 25 percent. The specific yield of the upper 300 feet of the Brunswick formation, based upon the volume of cracks, is probably more nearly in the order of 1 or 2 percent. Therefore, it is easy to understand the hy-

hydrologic importance of sources of ready recharge such as bodies of surface water or of relatively permeable sand and gravel in areas where large quantities of ground water are withdrawn from the formation. The capacity of individual cracks to transmit water is probably larger than that of a comparable volume of pore spaces in a sand. It is not surprising, therefore, to find that the capacity of the Brunswick formation to transmit water is about one-fourth of that of some of our important sand aquifers in spite of the relatively limited volume of cracks.

Pumping Tests - In January 1949, through the cooperation of the officials of P. Ballantine & Sons, two pumping tests were run on wells tapping the Brunswick formation. For several days all the company's wells were operated to suit the requirements of the test. At each of their two plants two wells were run continuously until conditions approaching equilibrium were established. This involved wasting water at some times of the day in order to have an adequate supply available at others, but it seemed to be the only practical way of reaching an approximate state of equilibrium. After about 24 hours, the effects of changing the rates of pumping at the plant appeared to have been eliminated, and, with one exception which will be discussed later, the effects of pumping at other plants in the area seemed to be of little importance.

The wells pumped during the two tests are shown on figure 3. They were selected to provide the best possible spread of observation wells in as many directions as possible. The first test was made by pumping well 1 at plant 1. This well is centrally located, and water levels were observed in seven other wells at various distances and directions from it. In the second test, well 9 at plant 2 was pumped and water levels were observed in the same group of observation wells. In this test, however, the pumping well was in one corner of the well field so that the distances to the observation wells were greater and their directions were less varied.

During the pumping tests, water-stage recorders were maintained on well 5 at plant 1 and on wells 8 and 10 at plant 2. The water levels in well 7 at plant 1 were measured by air pressure, using an 8-inch pressure gage on which it was possible to note changes of water level of one- or two-tenths of a foot. The water levels in the other wells were measured by air pressure, using ordinary pressure gages that would probably not indicate changes of water level of less than one foot. There were only four wells, therefore, in which water levels could be observed accurately; of these wells 5 and 7 at plant 1 appear to have been drawn down below the most productive cracks encountered in them. The best observations were therefore obtained in wells 8 and 10 at plant 2. Two of the wells observed, wells 4 and 8 at plant 1, were operated continuously during both tests to supply water for manufacturing purposes.

During the first test a prompt and distinct effect was observed in well 8, plant 2, when well 1, plant 1, was started and again when it was shut down. This seemed to indicate that these two wells tapped the same system of cracks. No distinct effect was observed in any of the other wells during this first test, even though it was continued for several hours. Well 7 at plant 1 is almost in a straight line with well 8, plant 2, and well 1, plant 1. It is in the opposite direction from well 1 and only about half as far away, yet no effect was observed in it. No definite effects of pumping or shut-down were observed in any of the other wells.

During the second test, when well 9, plant 2, was pumped a prompt and distinct effect was observed in well 10, plant 2, both at the beginning and at the end of pumping. None of the other wells being observed showed any distinct effect. It is interesting to note, however, that the recorder on well 10 showed a small but definite effect whenever well 27 at the plant of the Celanese Corporation of America was started or stopped. This well is approximately southwest of well 10 and about 2,400 feet from it, a distance substantially greater than that between any of the wells at the Ballantine plants.

It is believed to be significant that all the wells that were observed to affect one another during the

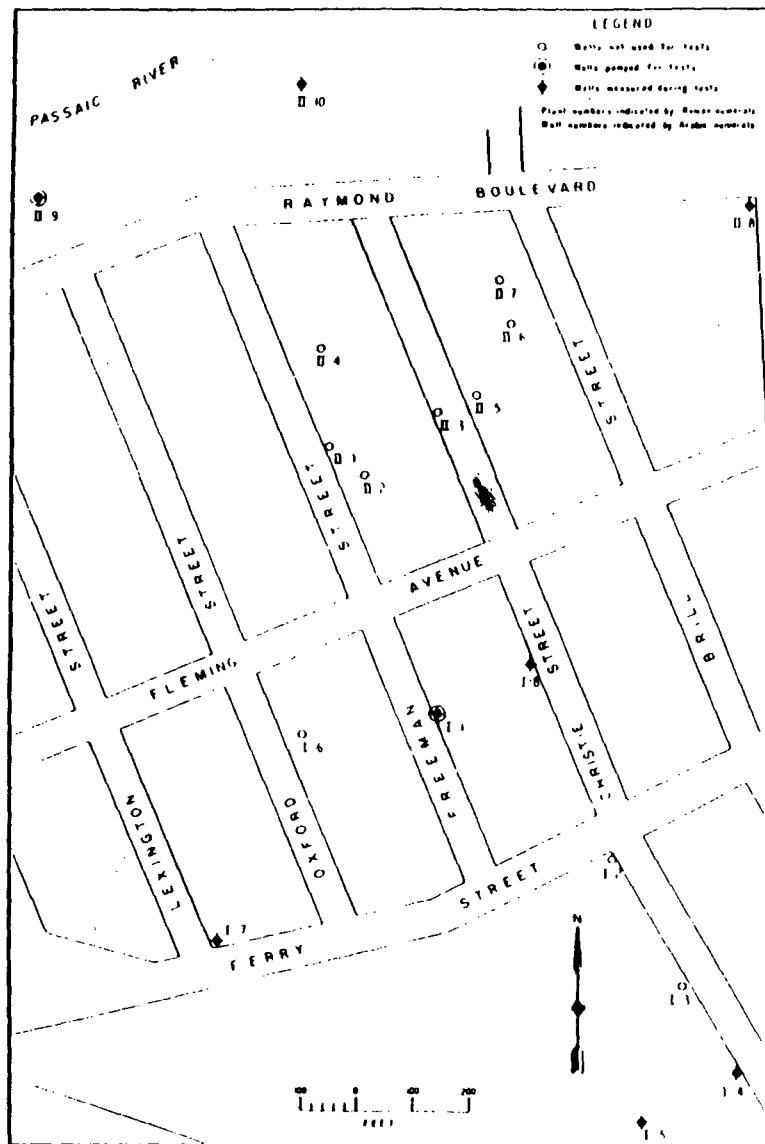


Figure 3. Map of a part of Newark, N. J., showing the location of wells at the plants of P. Ballantine & Sons and indicating the wells used for pumping tests in January 1949.

two tests at the Ballantine plants lay along lines trending in a general northeasterly direction. This seems to indicate that in the vicinity of the Ballantine and Celanese plants there is a dominant system of cracks in that direction. No doubt there are cracks in transverse directions, but their capacity to transmit water appears to be much smaller. Consequently, water moves through the cracks that trend northeast much more easily than it does in other directions and the primary interference between wells is to the northeast or southwest.

One result of this distribution of cracks is that the formulae used to compute coefficients of transmissibility and storage are not applicable to this area. These formulae are based upon the assumption, among others, that water can move freely through the aquifer in all directions. In some other localities where the distribution and character of the cracks are more nearly equal in transverse directions, it is believed that these formulae can be applied significantly to wells in the Brunswick formation. In this part of Newark, however, they do not apply.

The tests were not without significant results, however, merely because it was impossible to compute the usual coefficients from them. For example, in planning the locations of future wells, it should be useful to know the direction in which they will interfere most with each other or with existing wells. Similarly, it might be possible to plan an operating schedule that would minimize interference between wells and thus decrease somewhat the pumping lift. Artificial recharge will be most effective if it is distributed in a direction transverse to the major cracks, thus supplying more of them without depending upon the poorer cracks to distribute the water. The movement of contaminating materials such as salt water from the river or bay is probably most easily accomplished in a northeasterly or southwesterly direction after it reaches the rock. The structure of the rock does not, of course, affect appreciably the movement of such contaminants through the materials above the rock.

Long-term fluctuations of water levels and pumpage - In the investigation that preceded this report, it was found that relatively few well owners had kept accurate and continuous records of pumpage and that still fewer

had more than an occasional record of the water levels in their wells. Fortunately, important exceptions to this general rule were some of the larger users of ground water. In only one part of the area, however - the so-called "Ironbound District" in eastern Newark - was it possible to obtain sufficient data to justify a long-time estimate of pumpage rates and to compare it with similar records of water levels. In this area the two largest users of ground water are P. Ballantine & Sons and the Celanese Corporation of America. These companies are keeping excellent records of pumpage and water levels and have done so for some time.

When the records that these two companies furnished were combined with other data available in the area, it was possible to prepare a diagram (figure 4) that shows some significant trends of water levels and pumpage.

Probably the most striking features of figure 4 are the long-term trends toward greater pumpage and lower water levels. These two trends go together, of course, and from the studies made thus far it is not possible to say whether the lowering of water levels indicates a pumping rate in excess of natural recharge or merely the lowering necessary to induce flow into the area at the increasing rates. The apparent reversal of the downward trend of water levels in 1948 and 1949 is due to unusually good natural recharge coupled with artificial recharge that will be discussed later.

Almost equally striking are the seasonal fluctuations of water level and pumpage, which are related to each other and are due primarily to seasonal demands for water. Much of the water taken from the ground in the area is used for cooling and the demand is naturally greater in the summer. Furthermore, there is a seasonal demand, which is greatest in summer, for the products of some of the users of ground waters. This tends to accentuate the seasonal use of water. There is, of course, a greater recharge from precipitation during the winter when the demands of vegetation are at a minimum, but this probably accounts for only a few feet of the total fluctuation of water levels.

There is a notable similarity between the fluctuations of water level in the different wells shown in the diagram. This indicates that there is an over-all

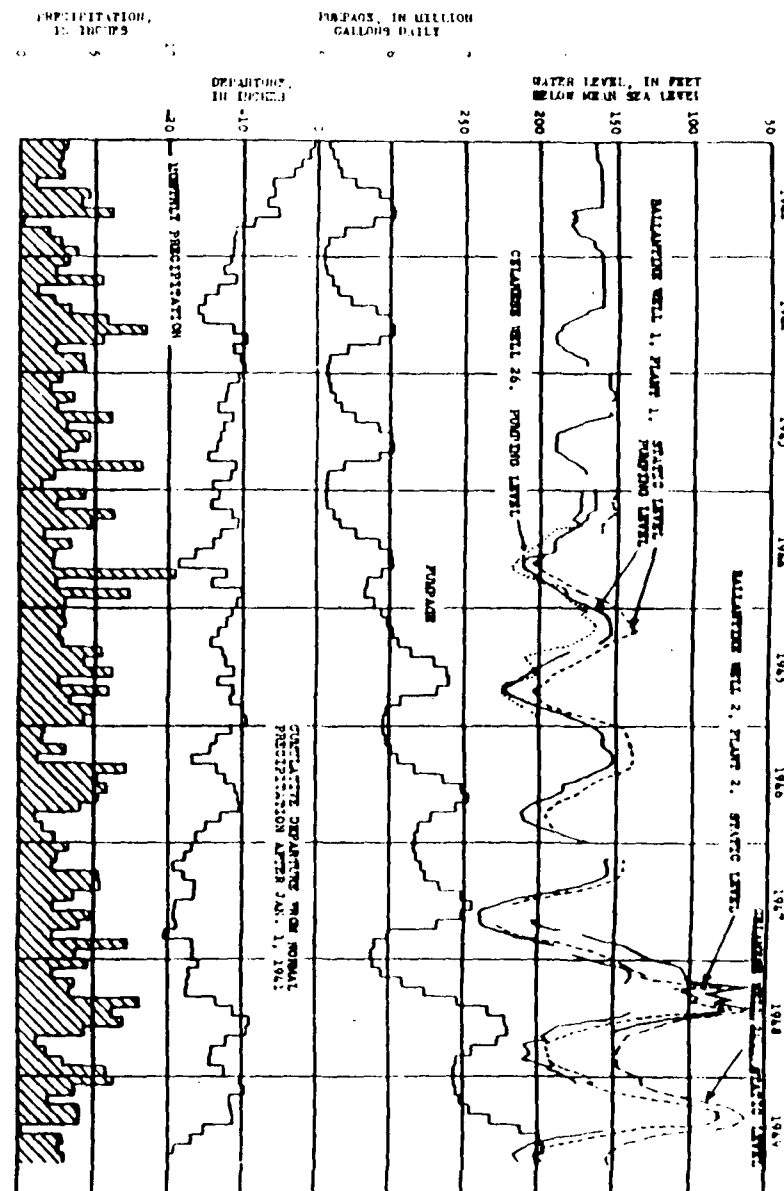


Figure 4.-Diagram showing fluctuations of pumpage and water levels in the eastern part of Newark, the monthly precipitation, and the cumulative departure from normal precipitation, 1941 to 1949.

connection between the various wells in the area and that the regional pumpage is of primary significance in determining the major fluctuations of water level. Minor differences are due, of course, to local conditions.

The wide range of seasonal fluctuations of water levels and the great depths to which they have been drawn are noteworthy. During recent years a change of one million gallons daily in the rate of pumping in this area has resulted in water-level fluctuations in the order of 60 to 75 feet. Furthermore, with a total pumpage of about seven million gallons daily the water levels have been lowered to 200 feet or more below mean sea level. In view of the fact that an early well in this vicinity flowed at an altitude of perhaps 10 feet above sea level, the current water levels represent actual draw-downs of more than 210 feet. The rate of lowering per million gallons pumped seems to be increasing and, indeed, this would be expected because of the decreasing capacity of the cracks with increasing depth. The figures strongly suggest that the rate of pumping in this vicinity cannot safely be increased very much more without serious consequences, unless the increase is accompanied by some measure of conservation such as artificial recharge.

The precipitation at Newark varies considerably from month to month, as indicated at the bottom of the diagram. The trend of the accumulated departure from normal precipitation is perhaps more useful in the study of ground-water trends because it indicates periods when increasing or decreasing amounts of water are available for underground storage or withdrawal. After the very dry period of 1941, the accumulated departure shows an essentially horizontal trend. This indicates that the long-term downward trend of water levels is not due to changes in precipitation. Some of the shorter trends may, however, have had some influence on the water levels. For example, the less severe drawdown in the summer of 1946 than in 1945 is probably due to the above-normal precipitation during the summer of 1946, as indicated by the rising trend of the departure line. Similarly, the sharp decline in the summer of 1947 is probably related to the declining trend of precipitation during that summer. It is obvious from a study of the diagram, however, that the fluctuations of pumpage rather than those of precipitation are the principal causes of the water-level fluctuations.

Artificial recharge.— The graphs of water levels in figure 3 show a sharp and abrupt rise in March 1948 and again in February 1949, both without any corresponding decrease in pumpage. These apparent anomalies, are caused by artificial recharging through wells, conducted experimentally by P. Ballantine & Sons with the cooperation of the Newark Water Department. On occasions during the winter when the temperature of the city water was as low as or lower than that of the ground water and when the city's reservoirs were overflowing, conditions were ideal for recharging. Water that would otherwise have gone to waste was stored underground and conserved for future use. Recharge was accomplished through several wells. In 1948 about 168 million gallons was stored in the ground in this way and in 1949 about 236 million gallons.

It had been hoped that the results of the pumping tests discussed earlier in this report would furnish accurate data for evaluating the effects of recharging. Unfortunately, it developed that conditions in this vicinity were unsuited to analysis in this way. However, the evaluation of the artificial recharge is not wholly dependent upon pumping tests.

As a result of the recharging, the water levels in the area as a whole were higher at the beginning of the season of heavy demand than they would otherwise have been. The greatest benefit occurred in the immediate area of the recharging, that is, in the Ballantine well field, but there were substantial gains at considerable distances. For example, during the recharging in 1949 a recorder was maintained on a well of the Celanese Corporation of America approximately half a mile from the center of recharging and water levels there rose sharply and promptly when the recharging was begun.

The water used for recharging probably did not drift very far away from the area in which it was introduced into the aquifer. Previous pumping had established a deep depression in the water table there and the effect of the recharging was to fill the depression partly. The improved water levels observed elsewhere occurred before water could possibly have moved through the aquifer from the point of recharge to the point of

observation. They represented a backing up of water that had previously been flowing into the Ballantine well field and that became available for withdrawal elsewhere when recharging began. The effect outside the Ballantine well field was exactly the same as if the rate of pumping at Ballantine's had been decreased by the amount that was recharged. And indeed the demand upon natural recharge was decreased by exactly that much. Much of the recharge water probably circulated directly to other wells in the Ballantine well field during the recharging. The remainder was almost certainly drawn into them soon after recharging ceased. Whatever benefits were derived from the higher quality and lower temperature of the recharge water were probably restricted entirely to the Ballantine well field. The gain in head and therefore in water stored in the ground extended to other nearby parts of the area.

Observations made during the recharging experiments indicated that the water levels in parts of the Ballantine well field may have risen above the top of the rock. This is not surprising in view of the limited capacity of the cracks in the rock. As soon as the water levels rose into the overlying glacial material the storage capacity was much greater. At no time did the head rise far enough to cause any loss of recharge water out of the system of aquifers. The highest water levels during the recharging were still more than 50 feet below mean sea level.

Chemical quality of the ground water

The chemical quality of the ground water from rock wells in the Newark area is shown by the analyses in table 1, on page 49. Analyses A and B are of water taken from wells in the western part of the area farthest removed from the Passaic River and Newark Bay. The water is hard, principally because of its calcium and magnesium content. It is too hard for boiler use, but is suitable for most other uses, particularly for cooling. Several tanneries using ground water in their operations report that the quality of the water has a "favorable" effect on their processes. One producer of carbonated water reported that the ground water

imparted a pleasing taste to his product. Where not contaminated by bacterial or other harmful impurities, the water is potable.

The general quality of water pumped from wells in the areas nearer the river and bay is shown in analyses C and D. This water is generally reported to be far more corrosive than the ground water in the areas farther from the river and bay, and where the chloride content is high the necessity of frequent replacement of ordinary bronze impellers on pumps has been reported. One user has apparently solved this problem by the use of impellers and pump bowls constructed of a high-nickel-content alloy. The highly mineralized water, of course, is generally not potable.

The high sulfate content of waters from some rock wells may be a function of the depth of the well. This may be explained by the fact that gypsum (calcium sulfate) has been observed in the cuttings taken from very deep wells. (See log of well 3, in appendix.) Gypsum has also been observed by the senior author in the cuttings from another deep well in Newark, and Meredith E. Johnson, New Jersey State Geologist, has observed gypsum in cuttings taken at 500 feet from a well drilled in the Brunswick formation near Westfield, New Jersey. In the cuttings from the bottom of the Celanese Corporation well, the gypsum occurred as large plates (1 1/2 by 1/2 by 1/8 inches) which had every appearance of having been the fillings of cracks. Presumably, therefore, gypsum, originally deposited in the cracks in the rock, has remained in the deeper cracks because it was not exposed to the circulation of meteoric waters.

Occasionally, wells drilled into the rocks of the Brunswick formation have yielded water of high mineral content upon completion. In such wells, it has sometimes been possible to lower the mineral content of the water by pumping the well heavily for a prolonged period. High mineral concentrations of this sort are probably caused by the ground water having been more or less stationary long enough to dissolve the mineral matter from the rock. Heavy pumping permits circulation of ground water and may induce a flow of water of lower mineral content toward the well. So far as is known, no instances of this sort have been reported in the Newark area.

Table 2.--Analyses of water from rock wells in the Newark area
(Results in parts per million)

Well	A	B	C	D	E	F
Color	0	0	0	0		
Total hardness as CaCO ₃	300	282	380	2,870		
Dissolved solids	431	378	749	4,780		
Specific conductance, micromhos at 25° C.	669	614	1,220	6,960		
pH	7.2	7.6	7.5	7.3		
Silica (SiO ₂)	22	20	18	31	34	
Iron (Fe)	.17	.13	1.1	.15		
Calcium (Ca)	105	67	111	865	340	426
Magnesium (Mg)	9.3	28	25	173	60	51
Sodium (Na)	19	16	87	447	18	48
Potassium (K)	1.8	2.7	2.8	7.0		
Carbonate (CO ₃)	0	0	0	0		
Bicarbonate (HCO ₃)	202	213	150	210	76	19
Sulfate (SO ₄)	88	66	91	911	998	1,380
Chloride (Cl)	25	28	230	1,900	6.2	26
Fluoride (F)	.1	.1	.1	.0		
Nitrate (NO ₃)	45	29	31	6.2		

Table 2.--Analyses of water from rock wells in the Newark area (continued)

A) From 310-foot well, Frick Bros. Creamery, Irvington, N. J.

Analysis by U.S.G.S., January 1948.

B) From 300-foot well, Hooton Chocolate Co., Newark, N. J.

Analysis by U.S.G.S., January 1948.

C) From 558-foot well, Kresge Dept. Store, Newark, N. J.

Analysis by U.S.G.S., January 1948.

D) From 805-foot well, P. Ballantine & Sons, well 1, plant 1, Newark, N. J.

Analysis by the U.S.G.S., January 1948.

E*) From 250-foot well, Celluloid Works, Newark, N. J. Analysis by P. Ballantine & Sons, 1879. (See Ann. Rept. New Jersey State Geologist for 1879, p. 127.)

F*) From 615-foot well, Lister Bros., Newark, N. J. Analysis by P. Ballantine & Sons, 1879. (See Ann. Rept. New Jersey State Geologist for 1879, p. 127.)

* Recalculated to P.P.m. by H. Herpers.

Reliable and detailed analyses of waters from wells pumping from the sand and gravel in the buried valley are not available at the present writing.

Salt-water intrusion

The infiltration of salt water into the body of fresh ground water is referred to as salt-water intrusion. In the Newark area it is believed to be caused principally by heavy pumping in areas adjacent to Newark Bay and the Passaic River. Heavy pumping lowers the general ground-water levels, creating a difference in head between the ground-water body and the nearby bay and river, inducing a flow of salt water into the water-bearing formations. Another factor that probably contributes to salt-water intrusion is the dredging of ship channels in the Passaic River and Newark Bay. As mentioned previously in the discussion of the hydrology of the Recent deposits, those deposits act as an imperfect barrier to the infiltration of salt water into the underlying materials. It is not improbable, therefore, that the deepening of ship channels in the river and bay has contributed to the breaking of the imperfect seal formed by the Recent (and, in some places, Pleistocene) deposits. In the areas of salt-water intrusion, the water in both the unconsolidated materials and the rocks is affected.

The attached map (figure 5) shows the distribution of the chloride content of the ground water in the area. Most of the data upon which the map was based were provided by the Newark City Chemist, through the courtesy of Dr. Charles V. Craster, Health Officer of the City of Newark. As almost all the analyses were made in 1942, when the City of Newark made a survey of certain qualities of the waters from wells in the city, the map presents a picture of the chloride content of the ground water at that time. Recent check analyses made in the investigation preceding this report, confirm generally the distribution of chloride shown. The curved lines represent points of equal chloride concentration.

Several areas of ground water with high chloride concentrations are shown, and all are in areas of relatively heavy pumpage. The first of these is along the Passaic River near the northern boundary of Newark, where there are several industries that use well water in processing.

The pumpage here is not as heavy as in the other areas, and great amounts of river water have not been drawn into the ground-water body. Mention might here be made of the single well near the bank of the Passaic River, just south of the area, marked A on figure 5, the water from which contained 1,710 parts of chloride per million. This well pumps from a gravel bed about 45 feet below the surface which is probably in direct hydraulic connection with the river.

The second area of high chloride concentration is near the intersection of Harrison Avenue and McCarter Highway. Here, fairly heavy pumpage has induced an inflow of water from the river.

The third area, near the intersection of Raymond Boulevard and Broad Street, contains several wells that pump large amounts of water, principally for air-conditioning.

The fourth and largest area with high concentrations of chloride in well waters is in the eastern part of the Newark area and is bounded roughly by Harrison Avenue on the north; by Fourth Street, extended to Port Street on the west; by Port Street on the south; and by the Passaic River and Newark Bay on the east. The area contains many industries that require large amounts of ground water for cooling and processing. Heavy pumping, continued over a period of many years, has caused the depression of the upper surface of the ground-water body, which has, in turn, led to river-water intrusion on a large scale. That the present character of the water in this area is materially different from its original character can be seen by comparison of analyses D, E, and F (See table 2 on p. 38). Analysis D was made of water taken from a well of P. Ballantine & Sons in January 1948, whereas analyses E and F, made in 1879, are of water taken from wells not far from the Ballantine plant. Analyses E and F show that the ground water in this section originally had a chloride content comparable to that of water taken from wells in areas away from the river and bay.

About 4,000 feet northeast of the intersection of State Highway 25 and Port Street a great concentration of chloride was found in three wells belonging to a single company. Some of the differences in chloride content in this area may be due to differences in depth. The

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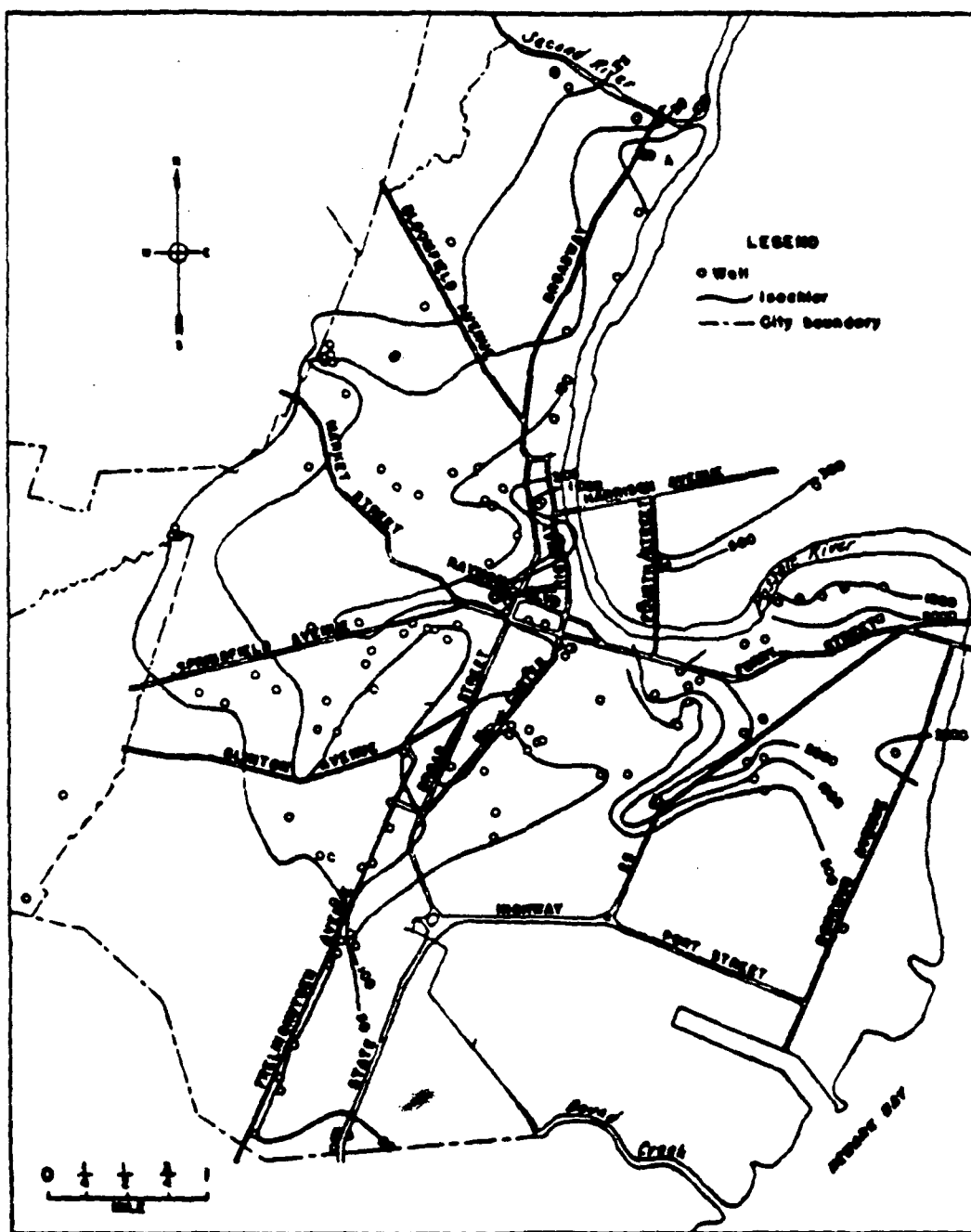


Figure 5.-Map showing chloride content of the ground water beneath Newark, N. J., and vicinity.

Temperature of the ground water

The average temperature of the ground water in the Newark area is approximately 55° F. The temperature of ground water, except as explained below, is largely a function of the depth of the aquifer from which it is drawn, and of the mean annual temperature of the air, which at Newark is 52.3° F. Water from very shallow wells will usually vary in temperature over the year. Water from somewhat deeper wells, however, has a temperature that, for all practical purposes, is equal to the mean annual temperature. The effect of the mean annual temperature on the temperature of ground water does not extend to great depths. It is known from numerous deep wells, mines, and test borings that the temperature of the earth's crust increases with depth. The rate at which the ground temperature increases with depth, known as the geothermal gradient, varies, depending upon many conditions, but generally an increase of 50 to 150 feet in depth will raise the temperature 1° F. Of course, in regions of active volcanism this rate of increase does not apply. In the Newark area the normal geothermal gradient is not known as all temperature measurements have been made at the point of discharge of the pumps. Each measurement, therefore, represents merely the temperature of the water issuing from the well, which is probably an average of the temperatures of water at all producing levels.

CONCLUSIONS

The studies that preceded this report were not detailed or prolonged enough to arrive at definite answers to important questions that arise with regard to the safe yield of the aquifers in the Newark area. Only very tentative conclusions can be made at this time. Observations and studies should be continued over a period of years in order that the safe yield may be defined.

Continuing observations should be made of the pumping rates in every well in the area and of the water levels in an adequate number of observation wells so that the rate and direction of flow in the aquifers and the

amount of recharge to them may be defined. Periodic analyses of the water from representative wells throughout the area should be made in order to detect changes in its quality and especially to define the intrusion of salt water. Geologic information should be sought to extend our knowledge of the buried channel that passes through the area and of the materials that fill it. Whenever wells or other deep excavations are made, particular attention should be given to the nature of the material overlying the rock in order to establish its geologic and hydrologic characteristics more fully, and ultimately to define the best areas of recharge.

In many parts of the area conclusive data are not available, but it seems probable that there are localities where additional quantities of ground water may be obtained. It also seems probable that in some heavily pumped parts of the area the safe yield is being approached or has already been exceeded. For example, in the area around the plants of P. Ballantine & Sons and the Celanese Corporation of America, the water levels have been lowered to such an extent that it seems unlikely that any substantial additional quantity of water can be withdrawn from the ground safely or economically. The quality of the ground water in this area is already unfit for some uses.

The experiments with artificial recharge at the Ballantine plant during the last two years offer promise of great improvement in the ground-water conditions in some parts of the area if water is available for continuing such recharge. This is certainly sound conservation practice and should be expanded as much as possible. Whenever recharging is undertaken in the future, careful observations should be made of water levels and of the quality and quantity of water recharged and withdrawn, in order to evaluate the effects more closely and to trace the movement of the water.

APPENDIX 1 - SELECTED WELL LOGS (CONT.)

2. Log of well 2 drilled for John Nieder, 247 Emmet Street, Newark, N. J., by Layne-New York Co. Log furnished by Mr. W. A. North of Layne-New York Co.

Depth	Thickness	Description	Correlation
0' - 3'	3'	Concrete	Recent
3' - 5'	2'	Cinders	Fill
5' - 15'	10'	Yellow clay	Recent ?
15' - 27'	12'	Fine red sand	Glacial drift
27' - 55'	28'	Red quicksand	"
55' - 80'	25'	Tough red clay	"
80' - 125'	45'	Soft red clay	"
125' - 190'	65'	Red sandy clay	"
190' - 210'	20'	Soft red clay	"
210' - 215'	5'	Hardpan	"
215' - 225'	10'	Sand and clay	"
225' - 408'	183'	Red rock	Triassic

APPENDIX 1 - SELECTED WELL LOGS

1. Log of well 2, drilled for Driver Harris Co., Harrison, N. J., by C. K. Lauman & Co. Log furnished by C. K. Lauman & Co.

Depth	Thickness	Description	Correlation
0' - 21'6"	21'6"	Fill	Fill Glacial drift
21'6" - 30'10"	9'4"	Sand and gravel	
30'10" - 39'0"	8'2"	Coarse sand and gravel	Fill Glacial drift
39'0" - 41'10"	2'10"	Strewns of hard red clay and gravel	
41'10" - 58'2"	16'4"	Red clay, (fine sand and gravel)	Fill Glacial drift
58'2" - 62'2"	4'0"	Red clay, (fine sand and gravel)	
62'2" - 71'9"	8'7"	Hard red clay and broken rock	Fill Glacial drift
71'9" - 82'0"	10'3"	Red clay and fine sand	
82'0" - 112'11"	30'11"	Red clay and rock	Fill Glacial drift
112'11" - 135'0"	22'1"	Red clay	
135'0" - 141'0"	6'0"	Hard packed sand	Fill Glacial drift
141'0" - 155'0"	14'0"	Red clay	
155'0" - 166'0"	11'0"	Clay, sand, and gravel	Fill Glacial drift
166'0" - 173'3"	7'3"	Hardpan	
173'3" - 178'3"	3'0"	Clay, (fine sand, and gravel)	Fill Glacial drift
178'3" - 187'3"	11'0"	Cemented sand and gravel	
187'3" - 192'3"	5'0"	Fine brown sand and clay	Fill Glacial drift
192'3" - 212'10"	20'7"	Red clay	
212'10" - 222'6"	9'6"	Sand, gravel, and red clay	Fill Glacial drift
222'6" - 229'6"	3'0"	Coarse sand and gravel	
229'6" - 231'6"	6'0"	Clay and gravel	Fill Glacial drift
231'6" - 234'6"	3'0"	Coarse sand and small gravel	
234'6" - 240'0"	5'6"	Clay and sand	Fill Glacial drift
240'0" - 243'0"	3'0"	Coarse brown sand, gravel, and some clay	
243'0" - 253'0"	10'0"	Medium coarse red sand and grit	Fill Glacial drift
253'0" - 270'0"	17'0"	Red clay and gravel	
270'0" - 281'0"	21'0"	Hard clay, sand, and large gravel	Fill Glacial drift
281'0" - 282'0"	1'0"	Medium coarse sand and large gravel	
282'0" - 287'0"	45'0"	Red shale	Triassic

APPENDIX I - SELECTED WELL LOGS (CONT.)

3. Log of well 27 drilled for Celanese Corporation of America by Layne-New York Co.
Compiled by H. Herpers from samples furnished by Wm. E. Helmstaedter, Mechanical Engineer,
Celanese Corporation of America.

Depth	Thickness	Description	Correlation
2' - 27'	25'	Fine-grained red-brown sand	Glacial drift
27' - 32'	5'	Coarse gravel composed of red shale (to 1/2 in.)	"
32' - 71'	39'	Fine-grained red sandy clay	"
71' - 354'	283'	Red shale	Triassic
354' - 365'	11'	Red shale (softer than last)	"
365' - 377'	12'	Soft red shale (similar to last)	"
377' - 419'	42'	Fine-grained red sandstone	"
419' - 537'	118'	Red shale	"
537' - 580'	43'	Red shale (softer than last)	"
580' - 650'	70'	Very soft red shale	"
650' - 695'	45'	Soft red shale with some gypsum grains	"
695' - 725'	30'	Red shale. A few gypsum grains	"
725' - 730'	5'	Fine-grained red sandstone	"
730' - 787'	57'	Red shale with some gypsum grains	"
787' - 796'	9'	Fine-grained red shaly sandstone with gypsum grains	"
796' - 840'	44'	Red shale	"
840' - 856'	16'	Red sandy shale with large (1-1/2 in. x 1 in. x 1/8 in.) plates of gypsum, which appear to have been deposited in fractures in rock	"

APPENDIX I - SELECTED WELL LOGS (CONT.)

4. Log of test boring No. 19, made at crossing of Route 25 addition and Lehigh Valley R. R. yards by Giles Drilling Co. for State Highway Department. Compiled by H. Herpers from inspection of samples.

Depth	Description	Correlation
0' - 3'	Cinders	Fill
4' - 5'	Cinders and meadow muck	Fill and Recent
10' - 11'	Cinders, gray clay, and meadow muck	"
16' - 17'	Gray, slightly sandy clay	Recent
20' - 21'	Red and gray clay and medium sand	Recent (reworked glacial drift)
30' - 31'	Fine red silty sand	Glacial drift
40' - 41'	Red clay	"
50' - 51'	Red sandy clay	"
60' - 61'	Red sandy clay and red shale (top of rock)	Triassic
61' - 71'	Red shale (core)	"

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REFERENCE NO. 20

TO: File

DATE: 5/8/89

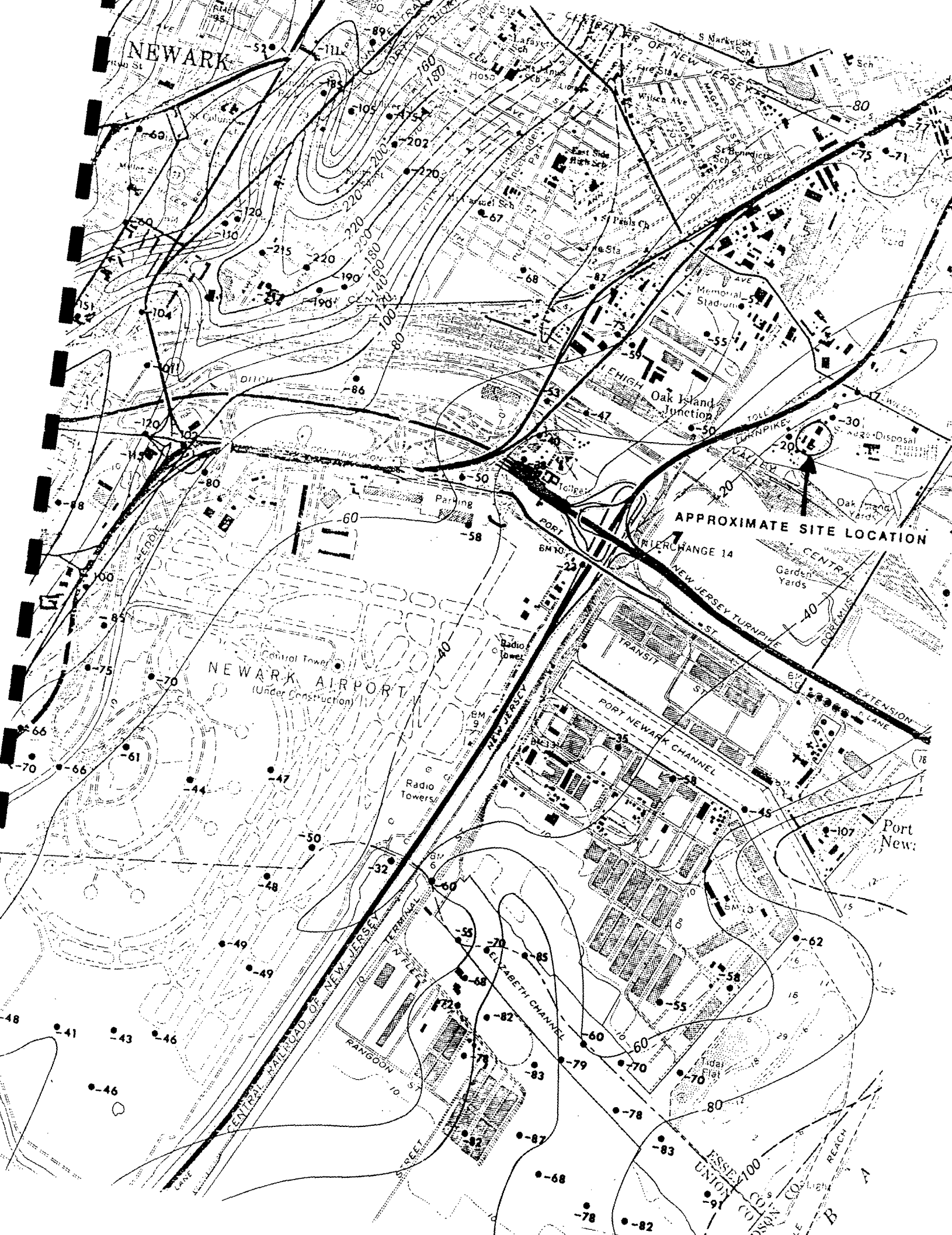
FROM: Gerald Hannay

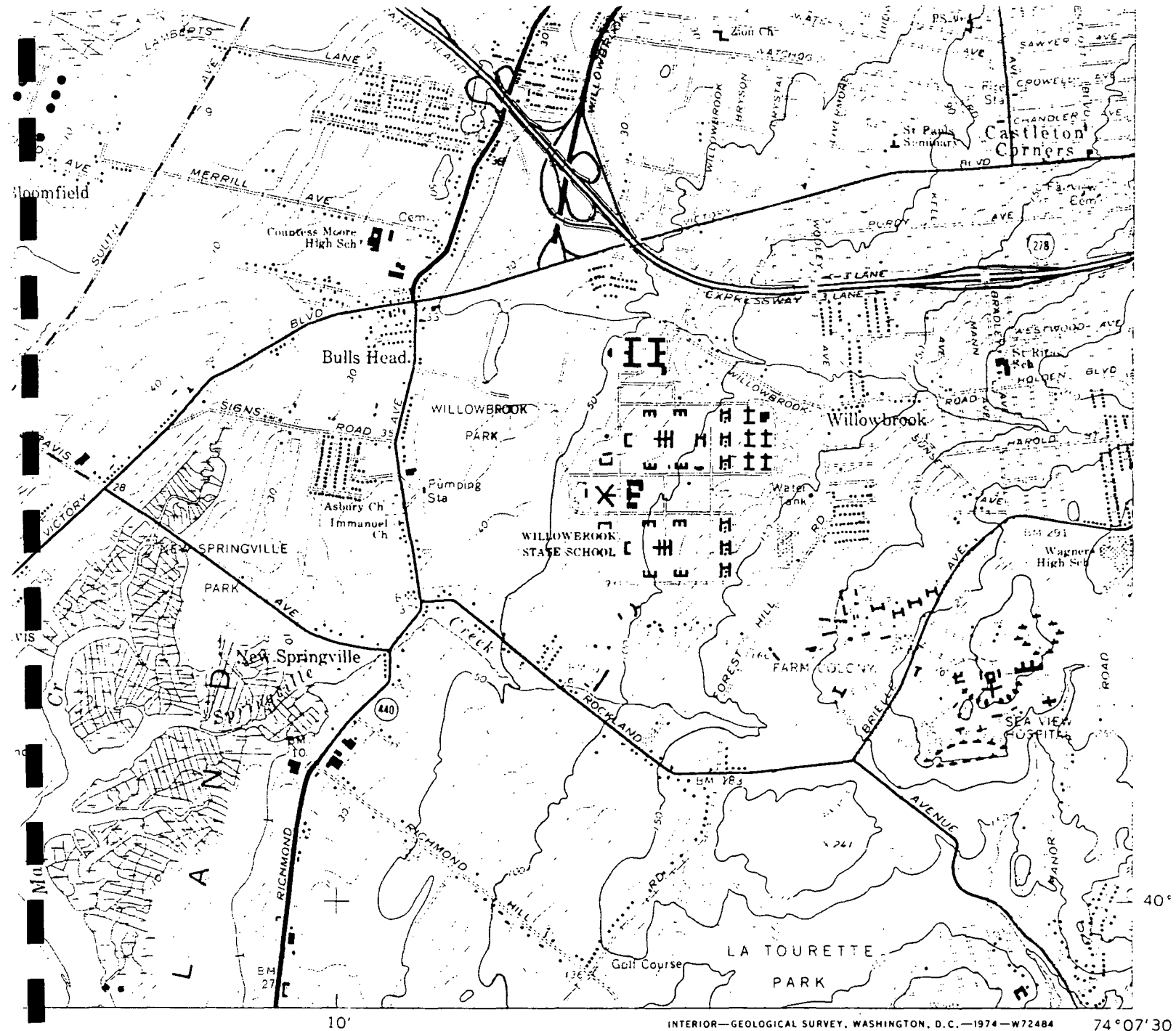
COPIES:

SUBJECT: 3-Mile Vicinity Map, PA Report (02-8904-14)

REFERENCE: The 3-Mile Vicinity Map is located in
a plastic folder at the back of the report.

REFERENCE NO. 21





EXPLANATION

●27 WELL OR BORING — Number indicates altitude of bedrock surface, in feet above or (– below) mean sea level

— 0 — BEDROCK CONTOUR — Shows altitude of bedrock surface. Dashed where approximately located. Contour interval 20 feet. Datum is mean sea level

REFERENCE NO. 22

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO:

02-8904-01-PA

DATE:

4/25/84

TIME:

1440

DISTRIBUTION:

File -

Crompton & Knowles Corporation

BETWEEN:

Anthony Debarros

OF:

Newark
Water
Department(Engineering
Dept)

PHONE:

(201) 256-4965

AND:

Dennis Forester NUS Corp.

DISCUSSION:

Mr. Debarros informed me that the Passaic River has no apparent use in the Newark area. When I ~~asked~~ ^(DIT) ^(DIT) ~~asked~~ ^(DIT) if it was used for industrial purposes, he informed me to the best of his knowledge ^(DIT), it wasn't even used for industrial purpose). He also informed me that the Weequahic Lane was used only in the event of drought emergencies.

Dennis Forester

ACTION ITEMS:

REFERENCE NO. 23

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

NUS CORPORATION AND SUBSIDIARIES **TELECON NOTE**

CONTROL NO: CL-8801-01	DATE: 01-20-88	TIME: 1400
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CONTROL NO: CL-8801-01	DATE: 01-20-88	TIME: 1400
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CONTROL NO: CL-8801-01	DATE: 01-20-88	TIME: 1400
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CONTROL NO: CL-8801-01	DATE: 01-20-88	TIME: 1400
---------------------------	-------------------	---------------

DISTRIBUTION:

SCP

DISTRIBUTION:

SCP

BETWEEN:	OF: <i>Assoc. of Public Work Engineers</i>	PHONE:
<i>Mr. Melito</i>	<i>Public Work Engineer</i>	<i>(201) 226-8500</i>

BETWEEN:	OF: <i>Assoc. of Public Work Engineers</i>	PHONE:
<i>Mr. Melito</i>	<i>Public Work Engineer</i>	<i>(201) 226-8500</i>

BETWEEN:	OF: <i>Assoc. of Public Work Engineers</i>	PHONE:
<i>Mr. Melito</i>	<i>Public Work Engineer</i>	<i>(201) 226-8500</i>

BETWEEN:	OF: <i>Assoc. of Public Work Engineers</i>	PHONE:
<i>Mr. Melito</i>	<i>Public Work Engineer</i>	<i>(201) 226-8500</i>

BETWEEN:	OF: <i>Assoc. of Public Work Engineers</i>	PHONE:
<i>Mr. Melito</i>	<i>Public Work Engineer</i>	<i>(201) 226-8500</i>

AND: Richard As one

AND: Richard As one

Mr Melito informed me that to
his knowledge there are no drinking water
wells in the whole city of Newark.

Mr Melito informed me that to
his knowledge there are no drinking water
wells in the whole city of Newark.

ACTION ITEMS:

REFERENCE NO. 24

[illegible]

SCALE: 1:24,000

1984

HOW TO USE THIS ATLAS

The Atlas contains reductions of all 1:24,000 National Wetlands Inventory maps. Maps appear in alphabetical order. Map names can be located on the index map (Figure 2). Each map shows the configuration, location and type of wetlands and deepwater habitats found within a given area.

WETLAND LEGEND

Wetland data are displayed on maps by a series of letters and numbers (alpha-numerics). Mixing of classes and subclasses are represented by a diagonal line. The more common symbols are shown below; less common symbols have been omitted for simplicity. For identifying these latter symbols, the reader should refer to an actual NWI map legend.

Examples of Alpha-numerics:

E2EMN6	=	Estuarine (E), Intertidal(2), Emergent Wetland(EM), Regularly Flooded(N), Oligohaline(6)
E2FL	=	Estuarine(E), Intertidal(2), Flat(FL)
PF01	=	Palustrine(P), Forested Wetland(FO), Broad-leaved Deciduous(1)
PEM/OW	=	Palustrine(P), Emergent Wetland/Open Water(EM/OW)
PFO/SS1	=	Palustrine(P), Forested Wetland/Scrub-Shrub Wetland(FO/SS), Broad-leaved Deceduous(1)

SYMBOLOLOGY

Systems and Subsystems:

M 1	=	Marine Subtidal	R 3	=	Riverine Upper Perennial
M 2	=	Marine Intertidal	R 4	=	Riverine Intermittent
E 1	=	Estuarine Subtidal	L 1	=	Lacustrine Limnetic
E 2	=	Estuarine Intertidal	L 2	=	Lacustrine Littoral
R 1	=	Riverine Tidal	P	=	Palustrine
R 2	=	Riverine Lower Perennial	U	=	Upland

Classes (subclasses and modifiers designated where appropriate):

AB	=	Aquatic Bed
BB	=	Beach/Bar
EM	=	Emergent Wetland
EMN6	=	Emergent Wetland, Regularly Flooded, Oligohaline
EMP6	=	Emergent Wetland, Irregularly Flooded, Oligohaline
EMR	=	Emergent Wetland, Seasonally Flooded-Tidal
FL	=	Flat
FO1	=	Forested Wetland, Broad-leaved Deciduous
FO2	=	Forested Wetland, Needle-leaved Deciduous
FO4	=	Forested Wetland, Needle-leaved Evergreen
OW	=	Open Water/Unknown Bottom
SS1	=	Scrub-Shrub Wetland, Broad-leaved Deciduous
SS3	=	Scrub-Shrub Wetland, Broad-leaved Evergreen
SS4	=	Scrub-Shrub Wetland, Needle-leaved Evergreen
SS5	=	Scrub-Shrub Wetland, Dead
SS7	=	Scrub-Shrub Wetland, Evergreen

[illegible]

ELIZABETH, NJ

[illegible]

BERSEY CITY NJ

REFERENCE NO. 25



ENDANGERED AND THREATENED WILDLIFE AND PLANTS

JANUARY 1, 1986

50 CFR 17.11 and 17.12

Department of the Interior
U.S. Fish and Wildlife Service

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Stork, oriental white	<i>Ciconia ciconia boyciana</i>	China, Japan, Korea, U.S.S.R.	do	E	3	NA	NA
Stork, wood	<i>Mycteria americana</i>	U.S.A. (CA, AZ, TX, to Carolinas), Mexico, Central and South America.	U.S.A. (AL, FL, GA, SC).	E	142	NA	NA
Swiftlet, Vanikoro	<i>Aerodramus (= Collocalia) vanikorensis bartsi</i>	Western Pacific Ocean: U.S.A. (Guam, Rota, Tinian, Saipan, Agiguan).	Entire	E	156	NA	NA
Teal, Campbell Island flightless	<i>Anas aucklandica nesiotis</i>	New Zealand (Campbell Island)	do	E	15	NA	NA
Tern, California least	<i>Sterna antillarum (= albatrus) browni</i>	Mexico, U.S.A. (CA)	do	E	2, 3	NA	NA
Tern, least	<i>Sterna antillarum</i>	U.S.A. (Atlantic and Gulf coasts, Miss. R. Basin, CA), Gr. and Lesser Antilles, Bahamas, Mexico; winters C. America, northern S. America.	U.S.A. (AR, CO, IA, IL, IN, KS, KY, LA (Miss. R. and tribs. N of Baton Rouge), MS (Miss. R.), MO, MT, NE, NM, ND, OK, SD, TN, TX (Except within 50 miles of coast)).	E	182	NA	NA
Thrasher, white-breasted	<i>Ramphocinclus brachyurus</i>	West Indies: St. Lucia, Martinique	Entire	E	3	NA	NA
Thrush, large Kauai	<i>Myadestes (= Phaeornis) myadestinus</i>	U.S.A. (HI)	do	E	2	NA	NA
Thrush, Molokai (= oloma'o)	<i>Myadestes (= Phaeornis) lanaiensis (= obscurus) rutha</i>	do	do	E	2	NA	NA
Thrush, New Zealand (wattlebird)	<i>Tumagra capensis</i>	New Zealand	do	E	3	NA	NA
Thrush, small Kauai (= puaiohi)	<i>Myadestes (= Phaeornis) palmeri</i>	U.S.A. (HI)	do	E	1	NA	NA
Tinamou, solitary	<i>Tinamus solitarius</i>	Brazil, Paraguay, Argentina	do	E	15	NA	NA
Trembler, Martinique (thrasher)	<i>Cinclocerthia ruficauda gutturalis</i>	West Indies: Martinique	do	E	3	NA	NA
Wanderer, plain (collared-hemipode)	<i>Pedionomus torquatus</i>	Australia	do	E	6	NA	NA
Warbler (wood), Bachman's	<i>Vermivora bachmani</i>	U.S.A. (Southeastern), Cuba	do	E	1, 3	NA	NA
Warbler (wood), Barbados yellow	<i>Dendroica petechia petechia</i>	West Indies: Barbados	do	E	3	NA	NA
Warbler (wood), Kirtland's	<i>Dendroica kirtlandi</i>	U.S.A. (principally MI), Canada, West Indies: Bahama Islands.	do	E	1, 3	NA	NA
Warbler (willow), nightingale reed	<i>Acrocephalus luscini</i>	Western Pacific Ocean	U.S.A. (Mariana Islands).	E	3, 4	NA	NA
Warbler (willow), Rodrigues	<i>Bebornis rodericanus</i>	Mauritius (Rodrigues Islands)	Entire	E	3	NA	NA
Warbler (wood), Semper's	<i>Leucophaea semperi</i>	West Indies: St. Lucia	do	E	3	NA	NA
Warbler (willow), Seychelles	<i>Bebornis sechellensis</i>	Indian Ocean: Seychelles Island	do	E	3	NA	NA
Whipbird, Western	<i>Psophodes nigrogularis</i>	Australia	do	E	3	NA	NA
White-eye, bridled	<i>Zosterops conspicillata conspicillata</i>	Western Pacific Ocean: U.S.A. (Guam)	do	E	156	NA	NA
White-eye, Norfolk Island	<i>Zosterops albogularis</i>	Indian Ocean: Norfolk Islands	do	E	15	NA	NA
White-eye, Ponape greater	<i>Rukia longirostris (= sanfordi)</i>	West Pacific Ocean: U.S.A. (Caroline Islands).	do	E	3	NA	NA
White-eye, Seychelles	<i>Zosterops modesta</i>	Indian Ocean: Seychelles	do	E	3	NA	NA
Woodpecker, imperial	<i>Campophylus imperialis</i>	Mexico	do	E	3	NA	NA
Woodpecker, ivory-billed	<i>Campophylus principalis</i>	U.S.A. (southcentral and southeastern), Cuba	do	E	1, 3	NA	NA
Woodpecker, red-cockaded	<i>Picoides (= Dendrocopos) borealis</i>	U.S.A. (southcentral and southeastern)	do	E	2	NA	NA
Woodpecker, Tristram's	<i>Dryocopus javensis richardsi</i>	Korea	do	E	3	NA	NA
Wren, Guadeloupe house	<i>Troglodytes aedon guadeloupensis</i>	West Indies: Guadeloupe	do	E	3	NA	NA
Wren, St. Lucia house	<i>Troglodytes aedon mesoleucus</i>	West Indies: St. Lucia	do	E	3	NA	NA

REFERENCE NO. 26

NUS CORPORATION

TELECON NOTE

CONTROL NO:

02-8904-14-PA

DATE:

6/4/89

TIME:

10:00

DISTRIBUTION:

File - Adco Chemical Co.

BETWEEN:

Jeffrey Sterling

OF:

NJDEP

PHONE:

(201) 668-3900

AND:

Gerald Lannay

(NUS)

DISCUSSION:

I asked him whether sample results came back for the samples taken under the R.R. tank cars and in the area of the solvent storage tanks, taken ^{during} ~~on~~ the June 16, July 8, and July 11, 1988 inspections. He indicated that the samples were analyzed for EP-toxicity and volatile organics and came up negative, indicating the spillages were probably of vegetable oil as reported by Adco.

I then asked him about the spillage noted in the warehouse. He indicated that the warehouse in question was the raw material storage building located close to the ^{sewerage} ~~sewage~~ line. He said the spill was of a solvent material but occurred on a concrete floor and was therefore not an environmental problem but an example of "bad housekeeping".

He said that a spill had occurred recently on site, which was being handled by Mark Commandatore, who was out today, but

ACTION ITEMS:

could be reached at this same number for further information. Mr. Sterling did not know much about the incident, but that drums which were not considered to be empty by NJDEP standards were allowed to spill on ^{the} ~~the~~ site.

I then asked him if the filter cake before solvent recovery was determined by the NJDEP to be a hazardous waste or an in-process material. He said the company had agreed to treat the

NUS CORPORATION

TELECON NOTE

CONTROL NO:

02-8904-14-PA

DATE:

6/17/89
210

TIME:

10:00

DISTRIBUTION:

File - Adco Chemical Co.

BETWEEN:

Jeffrey Sterling

OF:

NJDEP

PHONE:

(201) 669-3760

AND:

Gerald Hannay

(NUS)

DISCUSSION:

filter cake as a hazardous material, even though it was exempt from permit status, the ^{13"}cake was to be treated as a hazardous waste. The company agreed to follow the regulations pertaining to hazardous waste storage; i.e., the drums were to be properly labeled, treated within 90 days, etc. He said that the facility has not been inspected since the June 16, July 8, and July 11, 1988 inspection and would be inspected again in two weeks, when it would be determined if the company is in compliance with these regulations.

I then asked him about the monitoring well noted in the NUS off-site recon. form and he said he was not aware of a monitoring well or of any groundwater studies being done in relation to the facility. He was also not aware of any tanks deposited outside the fenced in area of the facility and that this would be investigated in the upcoming inspection.

He indicated that the violation citing the need for a

ACTION ITEMS:

part B permit was the result of routine, paper violations.

Gerald J. Hannay 6/14/89

REFERENCE NO. 27

NUS CORPORATION

TELECON NOTE

CONTROL NO:

02-8904-14-PA

DATE:

6/15/89

TIME:

9:43

DISTRIBUTION:

File - Adco Chemical Co.

BETWEEN:

Mark Commandatore

OF:

NJDEP

PHONE:

(201) 669-3960

AND:

Gerald Hannay

(NUS)

DISCUSSION:

I asked him about the spill that Jeffrey Sterling told me had occurred recently. He said they found drums overturned on the northern side of the warehouse located north of Delancy street ^{on April 7, 1989, 4H}. He said that the drums were on a dirt patch on the north-western corner. The material spilled was reportedly toluene but analysis has not yet been done on the samples taken there. They are waiting for the results before they decide on remedial actions.

He did not know anything about the tanks located outside the fenced in area on the northern side of the facility, although he said he noticed them. He said a surprise RCRA inspection

ACTION ITEMS:

was planned to occur soon. He said he knew of no other problems associated with the facility at this time.

He said that he thought that the facility was going to be closing down operations soon.

Gerald A. Hannay 6/15/89

REFERENCE NO. 28

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
NEWARK, NEW JERSEY
ESSEX COUNTY

PANEL 8 OF 12
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
340189 0008 B

EFFECTIVE DATE:
MARCH 28, 1980



U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

INDEX TO MAP

500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations* With
Date of Identification
e.g., 12/2/74

100-Year Flood Boundary

500-Year Flood Boundary

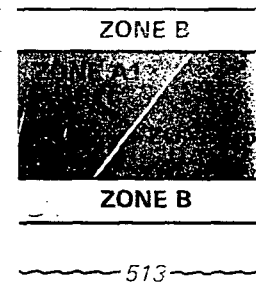
Base Flood Elevation Line
With Elevation In Feet**

Base Flood Elevation in Feet
Where Uniform Within Zone**

Elevation Reference Mark

River Mile

**Referenced to the National Geodetic Vertical Datum of 1929



(EL 987)

RM7 x

• M1.5

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
MARCH 15, 1974

ZONE

RUTHERFORD STREET

APPROXIMATE SITE LOCATION



PIKE

REFERENCE NO. 29

NUS CORPORATION

TELECON NOTE

CONTROL NO:

02-8904-14-PA

DATE:

6/14/89

TIME:

9:34

DISTRIBUTION:

File Adco Chemical Co.

BETWEEN:

Engineer
Mr. ZafarOF: Engineering Dept.
Newark

PHONE:

(201) 733-8112

AND:

Gerald Hannay

(NUS)

DISCUSSION:

I asked him about storm drainage in the area of Rutherford street and was told there is no storm drainage in that area

ACTION ITEMS:

REFERENCE NO. 30

SEDIMENTOLOGY OF NEWARK BAY, NEW JERSEY:

AN URBAN ESTUARINE BAY

BY

Dennis John Suszkowski

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Marine Studies.

June, 1978

tugs. In the Kill Van Kull, Newark Bay, and the Hackensack and Passaic Rivers, the U.S. Army Corps of Engineers maintains approximately 35 kilometers of navigation channels

Since the Newark Bay region is extremely populated and heavily industrialized, it has only been natural that the waters of this region be used for industrial and municipal waste disposal. Leighton (1902) stated that the natural resources of the Passaic River were severely damaged due to water pollution 75 years ago. Suszkowski (1973) showed that dissolved oxygen levels in all sections of New York Harbor declined dramatically at the turn of the century due to the increased organic loadings of a growing populous. Mueller et al.(1976) indicate that at present, Newark Bay and the Hackensack and Passaic Rivers receive discharges of domestic and industrial wastewater amounting to $6.6 \text{ m}^3/\text{sec}$. This is approximately 13% of the total fresh water input into Newark Bay.

REFERENCE NO. 31

NUS CORPORATION

TELECON NOTE

CONTROL NO:

02-8904-14

DATE:

6/20/89

TIME:

10:15

DISTRIBUTION:

File - Adco Chemical Co.

BETWEEN:

Mark Commandatore

OF:

NJDEP

PHONE:

(201) 669-3920

AND:

Gerald Hannay

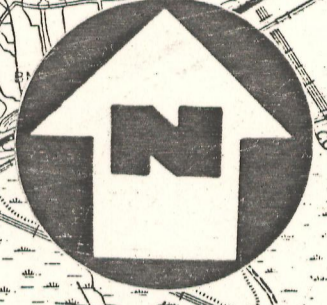
(NUS)

DISCUSSION:

I asked him exactly where samples were taken ^{by} and in regard to a conversation on 6/15/89. He told me aqueous samples were taken from puddles on the soil. He said an inspection of Adco was to be conducted this Friday 6/23/89.

ACTION ITEMS:

Gerald Hannay 6/20/89



Industrial Well No. 130016

APPROXIMATE SITE LOCATION

NEWARK INTERNATIONAL AIRPORT

U.S. MILITARY RESERVATION
CAVEN POINT
ARMY TERMINAL

U.S. NAVAL RESERVATION
BAYONNE SUPPLY CENTER



TITLE: THREE MILE VICINITY MAP

SITE:

ADCO CHEMICAL CO.
NEWARK, N.J.

DATE: 5/16/89

TDD: 02-8904-14

QUAD: ELIZABETH, N.J.

FIGURE
NUMBER:

SCALE: 1" = 2000'

